

**Mechanical Tiller
30-Inch**

OPERATOR'S MANUAL

OMM141979 J9

North American Version
Litho in U.S.A.

INTRODUCTION

Thank You for Purchasing This Product

We appreciate your business and wish you many years of safe and satisfied use of your machine.

Using Your Operator's Manual

This manual is an important part of your machine and should remain with the machine when you sell it.

Reading your operator's manual will help you and others avoid personal injury or damage to the machine. Information given in this manual will provide the operator with the safest and most effective use of the machine. Knowing how to operate this machine safely and correctly will allow you to train others who may operate this machine.

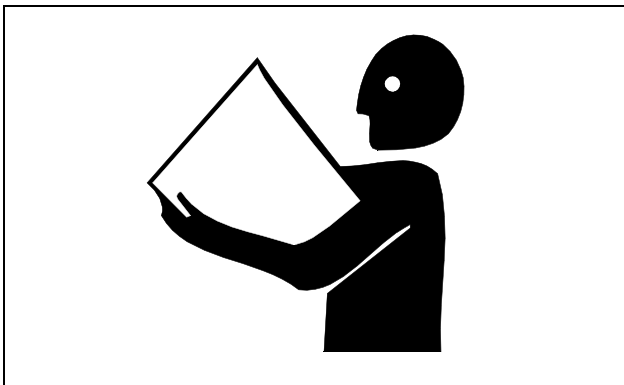
Section in your operator's manual are placed in a specific order to help you understand all the safety messages and learn the controls so you can operate this machine safely. You can also use this manual to answer any specific operating or servicing questions. A convenient index located at the end of this book will help you to find needed information quickly.

The machine shown in this manual may differ slightly from your machine, but will be similar enough to help you understand our instructions.

RIGHT-HAND and LEFT-HAND sides are determined by facing in the direction the machine will travel when going forward. When you see a broken line arrow (----->), the item referred to is hidden from view.

Special Messages

Your manual contains special messages to bring attention to potential safety concerns, machine damage as well as helpful operating and servicing information. Please read all the highlighted information carefully to avoid injury and machine damage.



CAUTION: Avoid injury! !

This symbol and text highlight potential hazards or death to the operator or bystanders may occur if the hazards or procedures are ignored.

IMPORTANT: Avoid damage! ! This text is used to tell the operator of actions or conditions that might result in damage to the machine.

NOTE: General information is given throughout the manual that may help the operator in the operation of the machine.

PRODUCT IDENTIFICATION

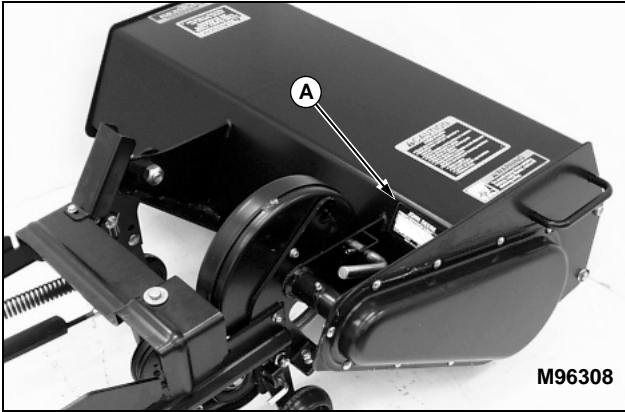
Record Identification Numbers

Mechanical Tiller

30-Inch Serial No. (010001 -)

If you need to contact an Authorized Service Center for information on servicing, always provide the product model and serial number.

You will need to locate the identification number for the machine and for the engine. Record the information in the spaces provided below.



DATE OF PURCHASE:

DEALER NAME:

DEALER PHONE:

SERIAL NUMBER (A):

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OMM141979 J9 - English

SAFETY

Understanding The Machine Safety Labels

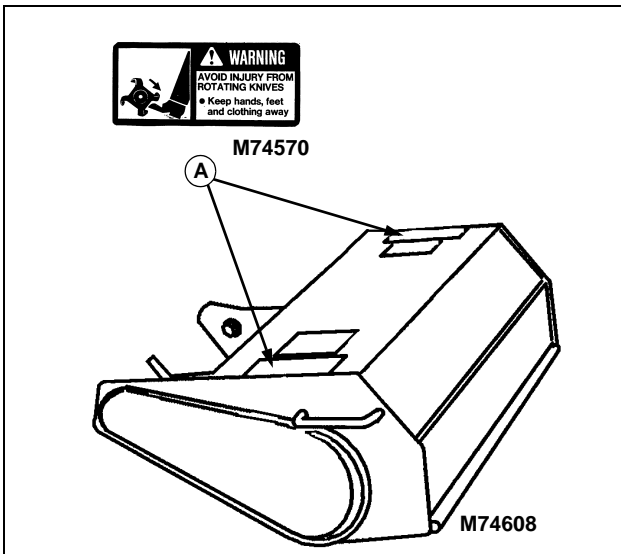


The machine safety labels shown in this section are placed in important areas on your machine to draw attention to potential safety hazards.

On your machine safety labels, the words DANGER, WARNING, and CAUTION are used with this safety-alert symbol, (▲). DANGER identifies the most serious hazards.

The operator's manual also explains any potential safety hazards whenever necessary in special safety messages that are identified with the word, CAUTION, and the safety-alert symbol, (▲).

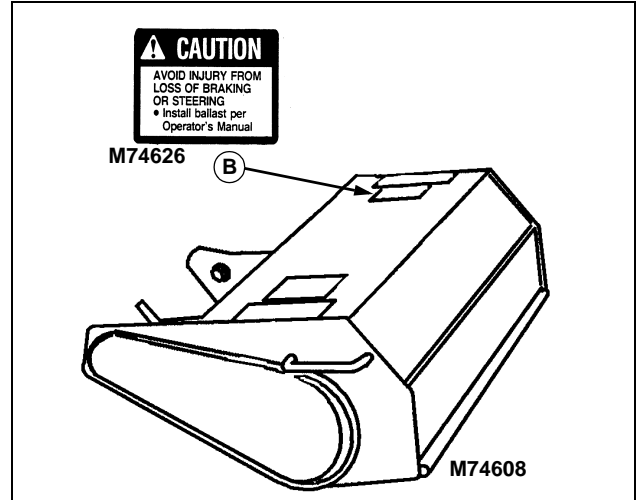
WARNING (A)



AVOID INJURY FROM ROTATING KNIVES

- Keep hands, feet and clothing away.

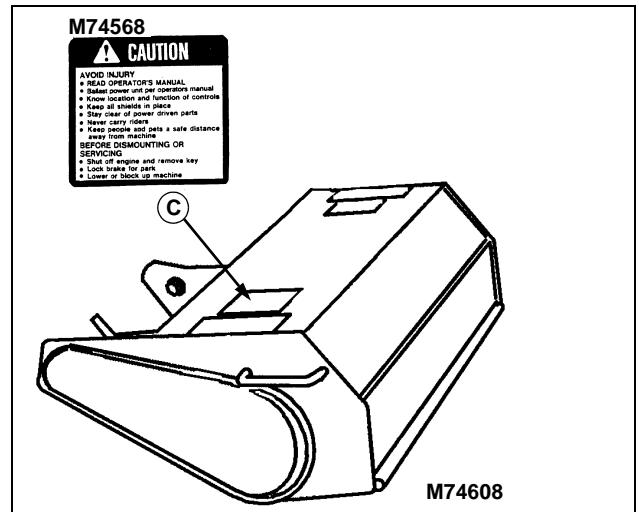
CAUTION (B)



AVOID INJURY FROM LOSS OF BRAKING OR STEERING

- Install ballast per Operator's Manual.

CAUTION (C)



AVOID INJURY

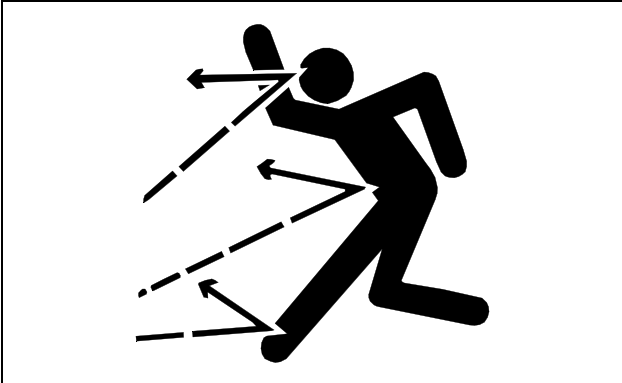
- READ OPERATOR'S MANUAL
- Ballast power unit per operator's manual.
- Know location and function of controls.
- Keep all shields in place.
- Stay clear of power driven parts.
- Never carry riders.
- Keep people and pets a safe distance away from machine.

SAFETY

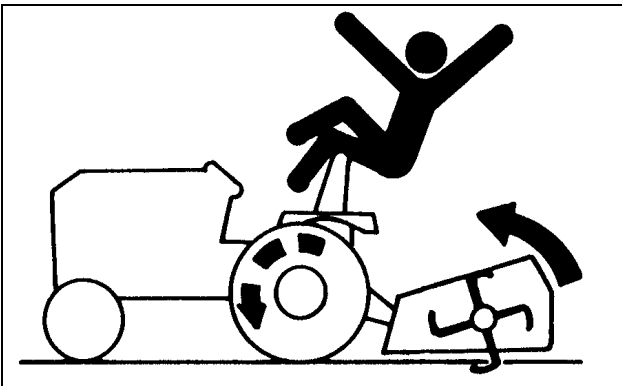
BEFORE DISMOUNTING OR SERVICING

- Shut off engine and remove key.
- Lock brake for park.
- Lower or block up machine.

Operate Safely

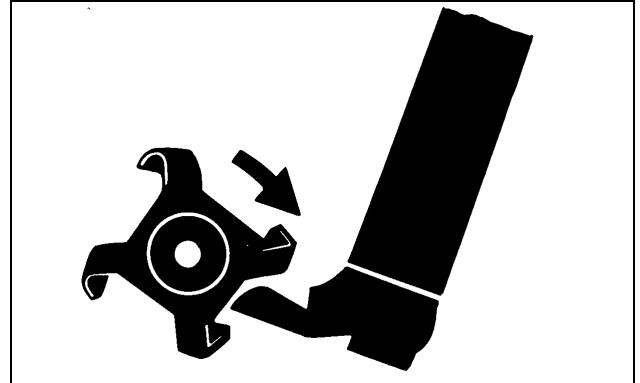


- Check vehicle brake action before you operate. Adjust or service brakes as necessary.
- Inspect machine before you operate. Be sure hardware is tight. Repair or replace damaged, badly worn, or missing parts. Be sure guards and shields are in good condition and fastened properly. Make any necessary adjustments before you operate.
- Clear work area of objects that might be thrown. Keep people and pets out of the work area. Stop machine if anyone enters the area.



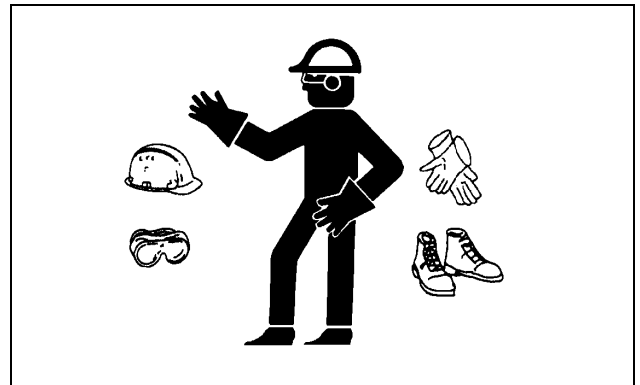
- If you hit an object, stop the machine and inspect it. Make repairs before continuing operate. Keep machine properly maintained and in good working order. Keep all shields and guards in place and fastened properly.
- DO NOT leave machine unattended when it is running.
- Only operate during daylight or with good artificial light.
- DO NOT let anyone, ESPECIALLY CHILDREN, ride on machine or vehicle.

- DO NOT let children or an untrained person operate machine.
- Raise tiller as-high-as it will go before you drive between work areas.
- DO NOT use tiller near the edge of a ditch or bank. Tiller can push tractor.
- Slow down on slopes.
- Stop tiller when you are NOT tilling.



- Tines turn at 250 rpm and can cause serious injury. Keep hands, feet and clothing away from tiller when tines are turning—always keep bystanders well away.

Wear Appropriate Clothing



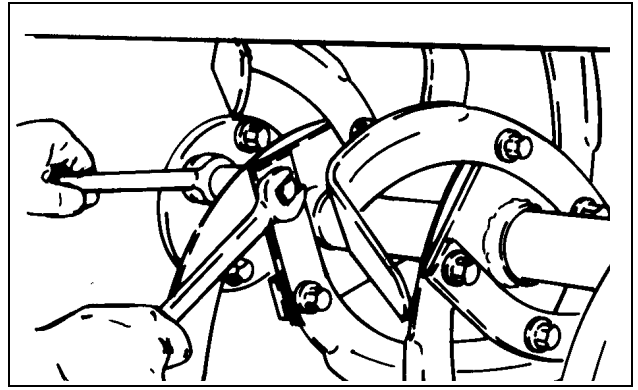
- Wear close fitting clothing and safety equipment appropriate for the job.
- Wear a suitable protective device such as earplugs. Loud noise can cause impairment or loss of hearing.
- DO NOT wear radio or music headphones. Safe service and operation requires your full attention.

SAFETY

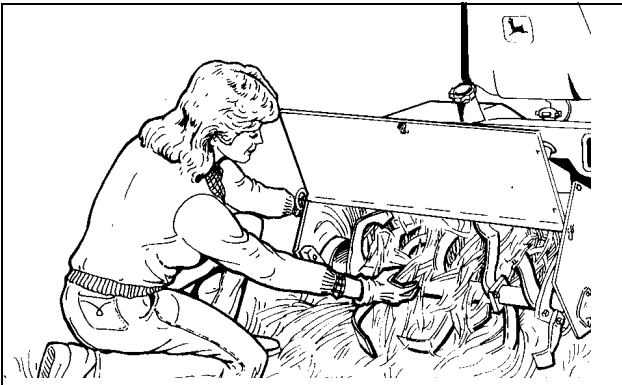
Practice Safe Maintenance



- Understand service procedure before doing work. Keep area clean and dry.
- Never lubricate, service, or adjust machine while it is moving. Keep safety devices in place and in working condition. Keep hardware tight.



- Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease or debris.
- Do not modify machine. Unauthorized modifications to the machine may impair its function and safety.



- Keep hands, feet, clothing, jewelry, and long hair away from any moving parts, to prevent them from getting caught.
- Lower attachments to the ground before servicing machine. Disengage all power and stop the engine. Lock park brake and remove the key. Let engine cool.
- Securely support any machine elements that must be raised for service work.
- Never run engine unless park brake is locked.

PREPARE VEHICLE

Remove Mower Deck

Tractor mower deck must be removed from before installing tiller. See your tractor operator's manual or mower deck manual for removal instructions.

Ballasting Requirements

All tractors require front wheel weights to be installed when using this tiller.

Follow these recommendations to help improve traction:

- Install tire chains on turf tires or install bar tires on the tractor.
- Install rear wheel weights.

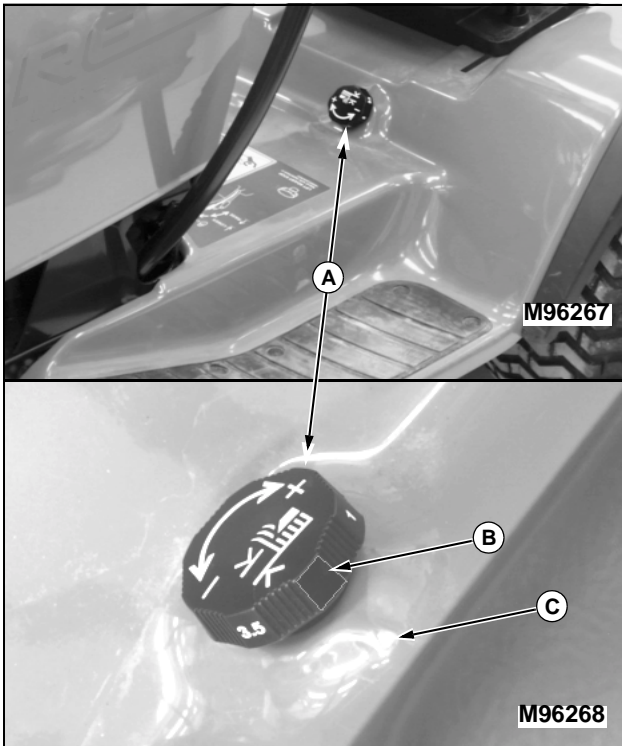
Ballast weights can be purchased from your Authorized Service Center. See your tractor operator's manual for further information.

INSTALLING

Park Vehicle Safely

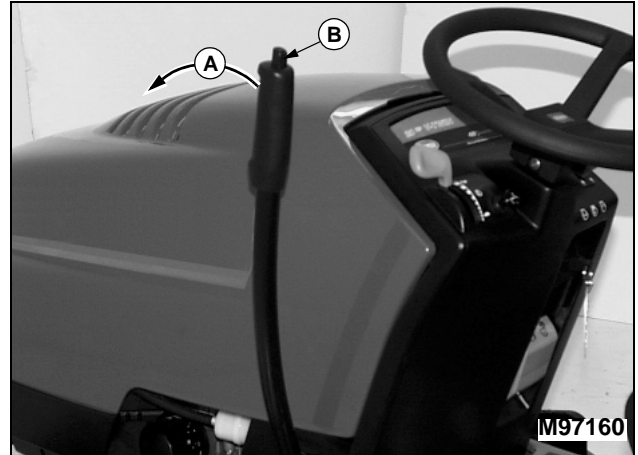
- Stop vehicle on a level surface, not on a slope.
- Disengage PTO.
- Engage the park brake.
- STOP the engine.
- Remove the key.
- Before you leave the operator's seat, wait for engine and all moving parts to STOP.

Setting Depth Control Knob



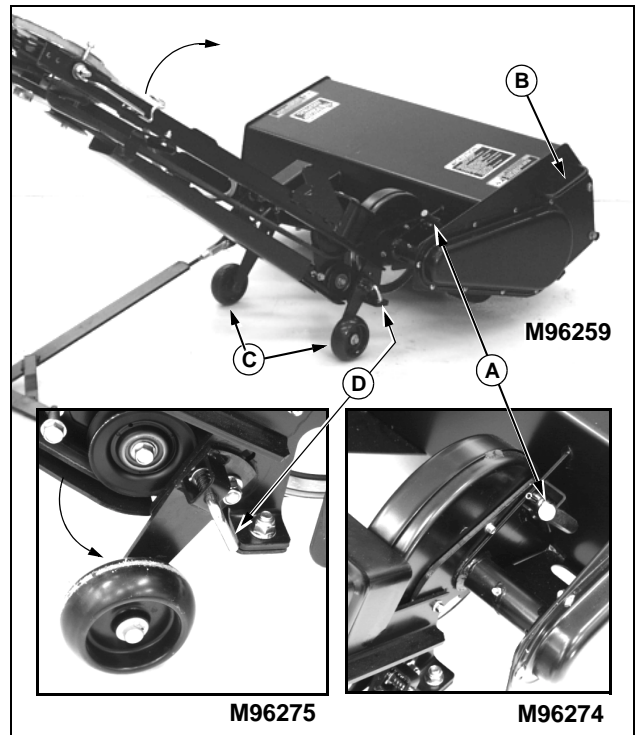
Turn depth control knob (A) to "ZERO" setting (B), raised indicator that is blank should be aligned with fender deck raised indicator (C).

Move Implement Lift Lever



1. Pull implement lift lever (A) rearward slightly, then depress and hold down button (B) to unlock lift lever locking mechanism.
2. Push lift lever (A) forward out of "RAISE" position, release button (B) as you continue to push lift lever all-the-way forward until a loud metallic-click is heard, signalling lever is in "LOCK-OUT" position, then release lift lever—it is now locked into "LOWER" position.

Put Tiller Frame Rails In Transport Position



1. Pull left frame rail up until locking pin (A) can be locked into locking bracket hole. Push down on tiller housing

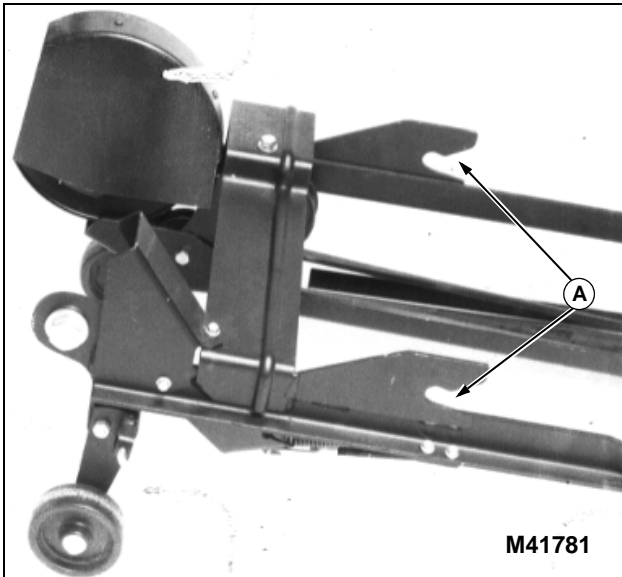
INSTALLING

handle (B) to rotate tiller housing while pulling left frame rail upwards to gain clearance to lower frame wheels (C).

2. Unlock locking pin (D) and rotate frame wheel down into engaged position and make sure locking pin locks into locking hole. Lock right frame wheel down into engaged position in similar fashion.

Install Tiller On Tractor Rear-Frame Mounting Hardware

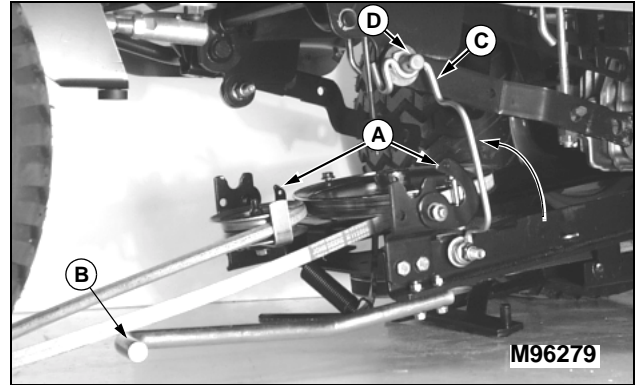
1. Roll tiller under rear of tractor.



2. Get a helper or use a floor jack with wheels to safely lift and install tiller, frame hooks (A) slide over spacers (B) of rear-frame mounting hardware.

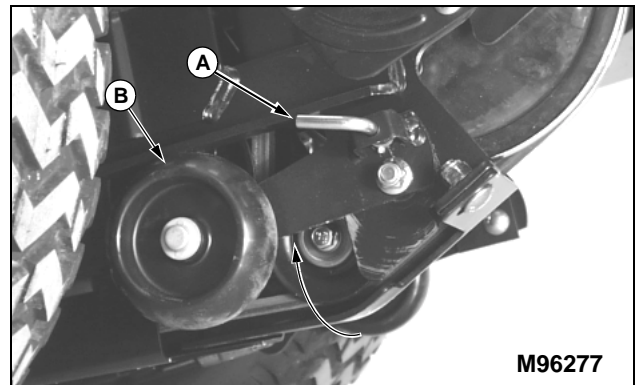
Engage Frame Support Rod

CAUTION: Avoid injury! Maintain a secure grasp of lift handle until support rod is in place. Keep hands clear of pinch areas between tiller and tractor frame.



1. Move to left side, under tractor footrest—open tiller latch clips (A) at both sides of tiller.
2. Push and hold down lift handle (B).
3. Pivot left-side frame support rod (C) upward so loop in rod is under mounting pin (D) of tractor frame.
4. Slowly release downward pressure on lift handle (B) to engage rod loop.

Lock Frame Wheels into Storage Position



1. Move to left rear, behind tractor drive wheels—pull and hold out wheel locking pin (A).
2. Swing left wheel assembly (B) up into “RAISED” position. Make sure locking pin engages hole in locking bracket. Repeat steps for right frame wheel.

INSTALLING

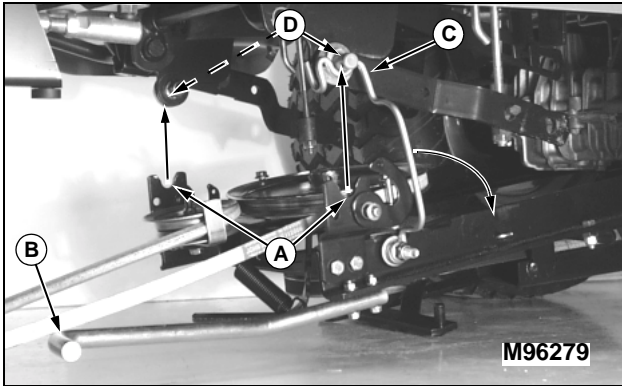
Disengage Frame Support Rod



CAUTION: Avoid injury!

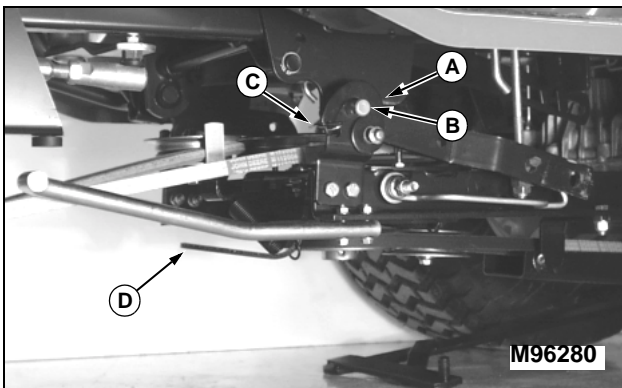
Maintain a secure grasp of lift handle (B) until tiller frame clips (A) are seated against mounting pins (D).

Keep hands clear of pinch areas between tiller and tractor frame.



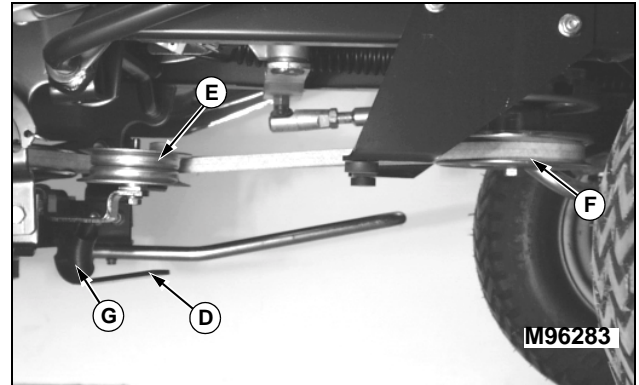
1. Move to left side, under tractor footrest—hold lift handle (B) down.
2. Pivot support rod (C) down into storage position.
3. Slowly release downward pressure on lift handle (B) until cups of tiller frame latches (A) are seated up against mounting pins (D).

Fasten Frame Clip Latches And Install Belt



1. Close clip of latch (A) around mounting pin (B) on each side of tractor.
2. Install spring locking pin (C), from bag of parts, into holes of each clip latch (A), outside-in, to prevent clips from vibrating or bouncing open.

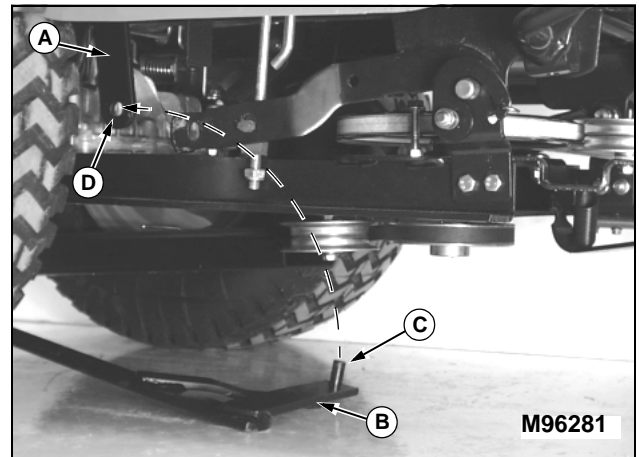
IMPORTANT: Avoid damage! Check that belt tensioning idler spring (G) is installed in top detent of belt tensioning lever (D). Damage to spring may occur or tensioning of idler may not apply proper tension on drive belt if spring is installed in the lower detent.



3. Move to right side, under tractor footrest—swing belt tensioning lever (D) toward front of tractor to loosen belt tensioning idler (E).
4. Move belt tensioning idler (E), by hand, towards right frame to help install belt on PTO drive sheave (F). Release idler after belt is completely seated in sheave.
5. Swing belt tensioning lever (D) toward rear of tractor to tighten belt.

Fasten Tiller Lift Rod to Tractor Lift Link

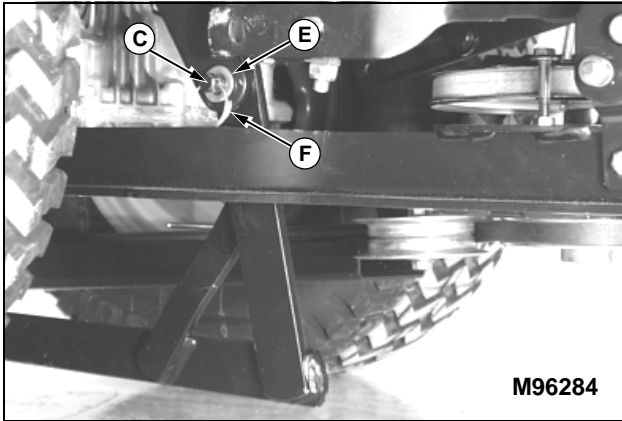
NOTE: Lock implement lift lever into “LOWER” position and unlock tiller housing from “TRANSPORT” position and lower it onto ground before fastening tiller lift rod (B)—this allows ease-of-alignment between tractor lift link (A) and tiller lift rod pin (C).



1. Move to right side, under tractor footrest—as you rotate

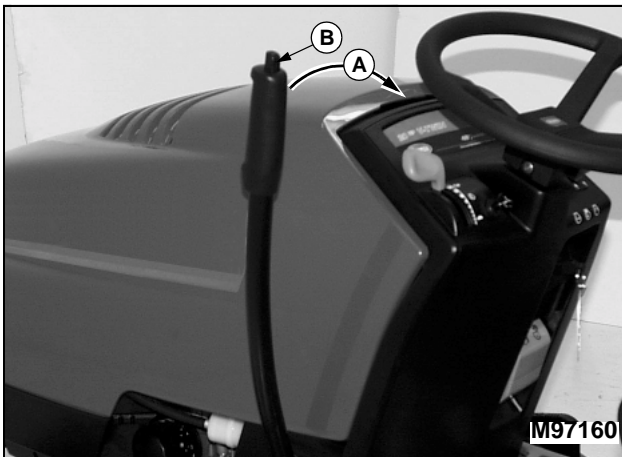
INSTALLING

tiller lift rod (B) upright, align tractor lift link (A) so pin (C) fits into hole (D) of lift link (A).

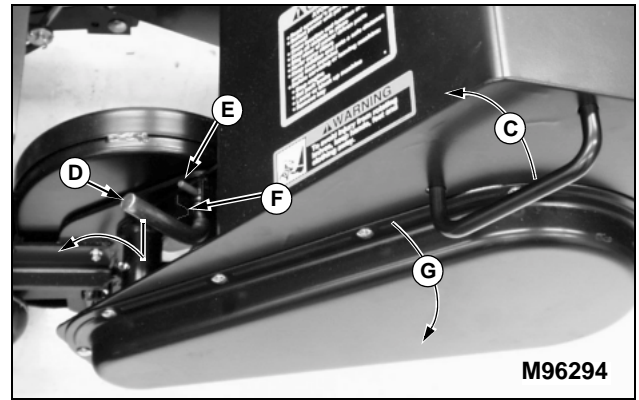


2. Install M13 x 24 x 2.5 mm washer (E), from bag of parts, on lift rod pin (C).
3. Fasten lift rod to lift link with spring locking ring (F), from bag of parts.

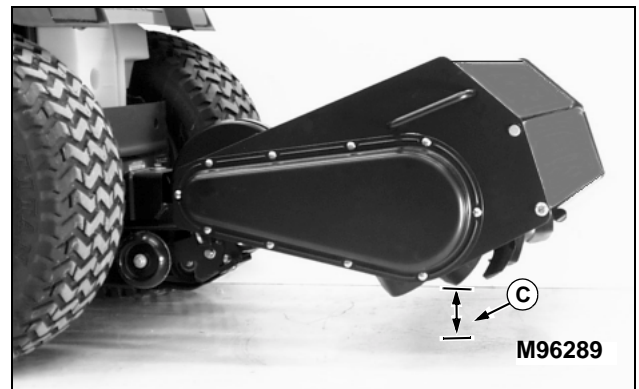
Adjust Tiller Lift Height



1. Push implement lift lever (A) forward slightly, then depress and hold down button (B) to unlock lift lever locking mechanism.
2. Pull lift lever (A) reward out of "LOWER" position, release button (B) and continue to pull lever all-the-way reward until a loud metallic-click is heard, signalling lever is in "LOCK-OUT" position, then release lift lever—it is now locked into "RAISE" position.



3. Move to left side of tiller housing—grasp handle (C) to raise tiller housing to remove pressure on transport locking pin (D) and continue to hold tiller housing stationary while you pull transport locking pin (D) out and rotate it forward into "LOCK-OUT" position, rolled pin (E) locked in frame slot (F).
4. Slowly lower tiller housing down (G) against tractor lift linkage.



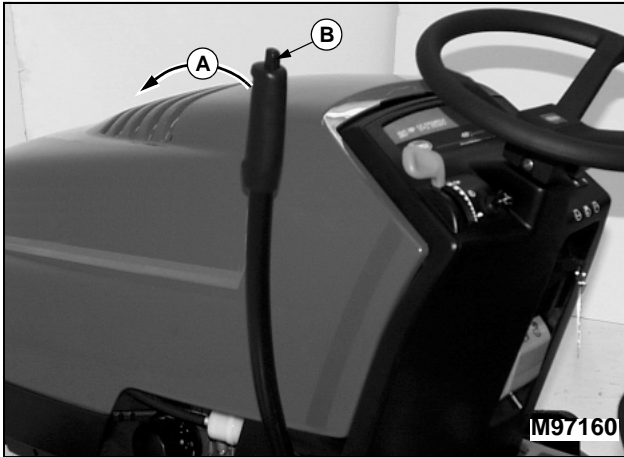
5. Measure distance (C) between lowest tine and ground. Distance should be 75 mm (3-in.). This will allow a maximum 150 mm (6-in.) tilling depth and enough ground clearance for turns on ends of tilling area. If distance is not correct, see Adjusting Tilling Depth in the OPERATING section.

REMOVING

Park Vehicle Safely

- Stop vehicle on a level surface, not on a slope.
- Disengage PTO.
- Engage the park brake.
- STOP the engine.
- Remove the key.
- Before you leave the operator's seat, wait for engine and all moving parts to STOP.

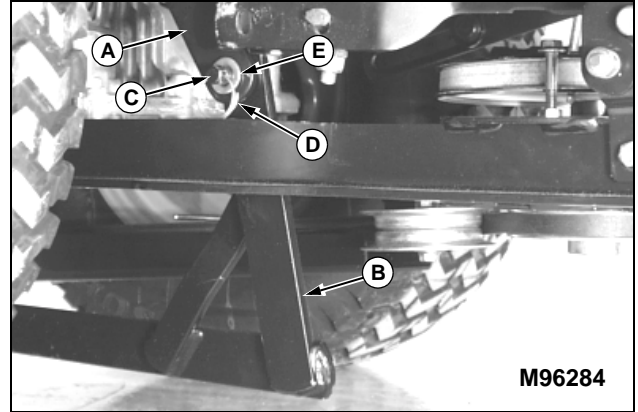
Move Implement Lift Lever



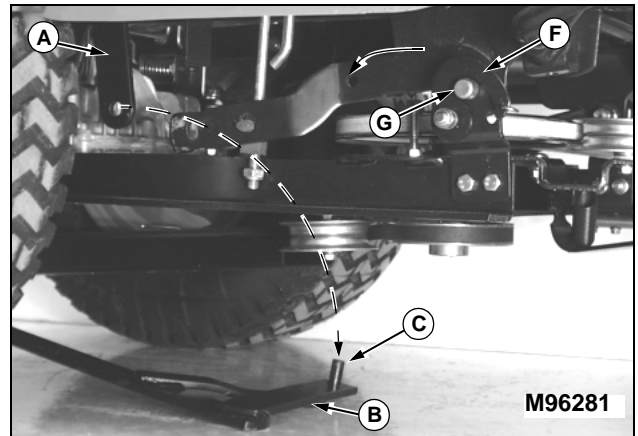
1. Pull implement lift lever (A) rearward slightly, then depress and hold down button (B) to unlock lift lever locking mechanism.
2. Push lift lever (A) forward out of "RAISE" position, release button (B) as you continue to push lift lever all-the-way forward until a loud metallic-click is heard, signalling lever is in "LOCK-OUT" position, then release lift lever—it is now locked into "LOWER" position.

Disconnect Tiller Lift Rod From Tractor Lift Link And Unhook Right Clip Latch

NOTE: Lock implement lift lever into "LOWER" position and unlock tiller housing from "TRANSPORT" position and lower it onto ground before disconnecting tiller lift rod (B)—this allows ease-of-disconnect between tractor lift link (A) and tiller lift rod pin (C).



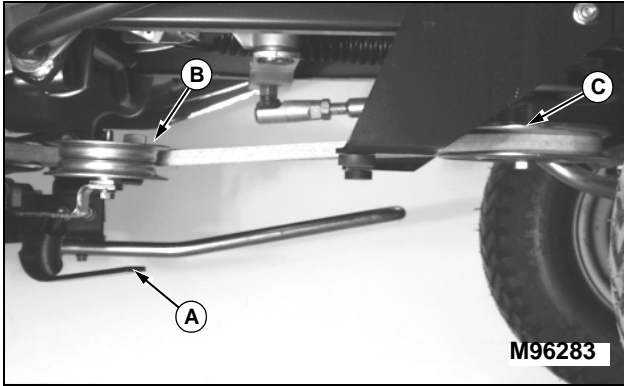
1. Move to right side, under tractor foot rest—remove spring locking ring (D) and washer (E) from tiller lift rod pin (C).



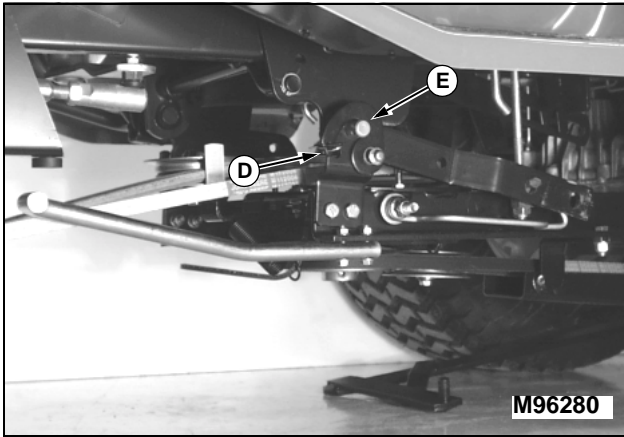
2. Pull tiller lift rod pin (C) from lift link (A) as you lower tiller lift rod (B) inward, onto ground.
3. Store washer (E) and spring locking ring (D) on lift rod pin (C).
4. Remove spring locking pin from clip latch (F) and flip clip of latch rearward to clear tractor mounting pin (G).

REMOVING

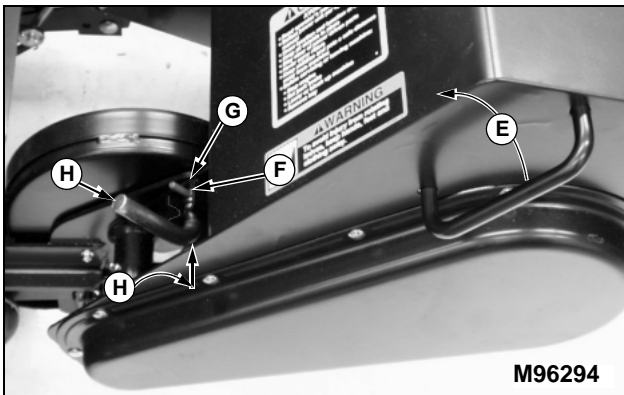
Disengage Belt And Unhook Left Clip Latch



1. Move to right side, under tractor footrest—move belt tensioning idler lever (A) out of “ENGAGED” position into “DISENGAGED” position (pointing toward front of tractor).
2. Pull and hold tensiometer (B) towards right frame while you remove belt from PTO drive sheave (C).



3. Move to left side, under tractor footrest—remove spring locking pin from clip latch (D) and flip latch of clip reward to clear tractor mounting pin (E). Install spring locking pins in clips for storage when finished removing tiller from tractor.



4. Move to left side of tiller housing—grasp handle (E) to raise tiller housing to align transport locking pin (F) with locking plate hole (G). Continue to hold tiller housing

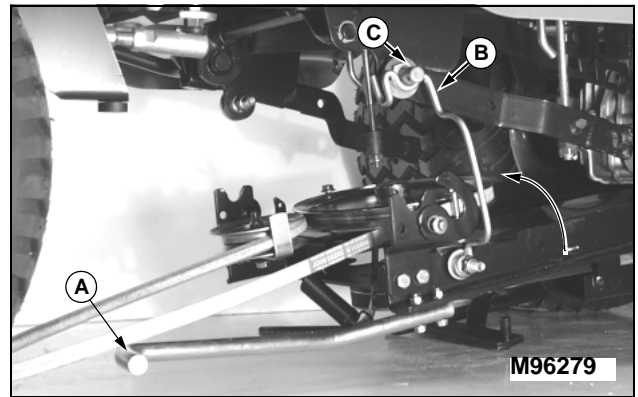
stationary while you rotate transport locking pin handle (H) rearward until spring tension “LOCKS-OUT” pin into “TRANSPORT” position.

5. Slowly lift housing handle (E) up-and-down to ensure pin is “LOCKED-OUT” before letting go of handle.

Engage Frame Support Rod



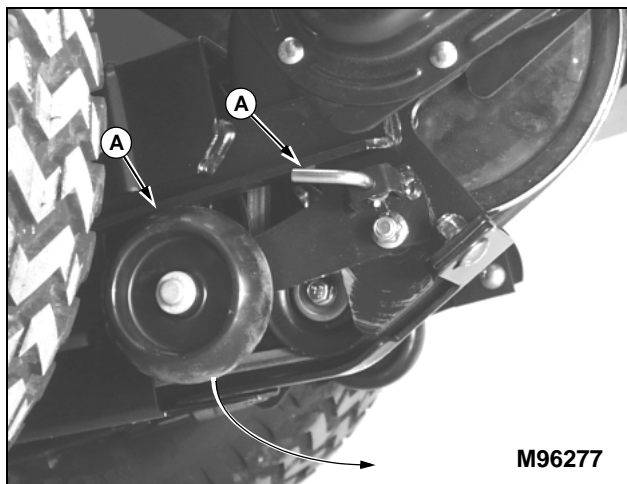
CAUTION: Avoid injury! Maintain a secure grasp of lift handle until support rod is in place. Keep hands clear of pinch areas between tiller and tractor frame.



1. Move to left side, under tractor footrest—push and hold down lift handle (A) as you pivot left-side frame support rod (B) upward so loop in rod is under mounting pin (C) of tractor frame.
2. Slowly release downward pressure on lift handle (A) to engage rod loop.

REMOVING

Lock Frame Wheels Into Engage Position

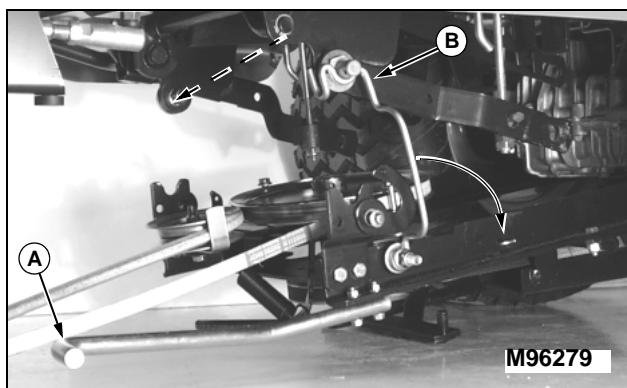


1. Move to left rear, behind tractor drive wheels—pull and hold out wheel locking pin (A).
2. Swing left wheel assembly (B) down into “ENGAGE” position. Make sure locking pin engages hole in locking bracket. Repeat for right frame wheel.

Disengage Frame Support Rod

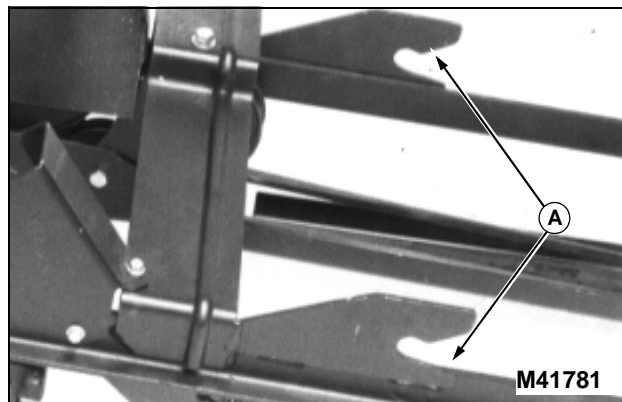


CAUTION: Avoid injury! Maintain a secure grasp of lift handle (A). Keep hands clear of pinch areas between tiller and tractor frame.

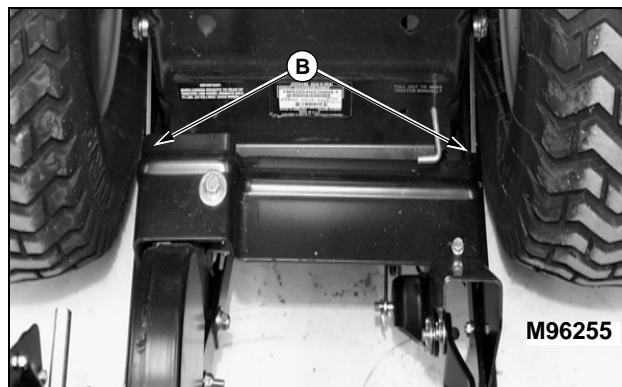


1. Move to left side, under tractor footrest—push and hold lift handle (A) down.
2. Pivot support rod (B) down into storage position.
3. Slowly release downward pressure on lift handle (A).

Remove Tiller From Tractor Rear-Frame Mounting Hardware



1. Get a helper or use a floor jack with wheels to safely support and slide tiller housing as you slide frame hooks (A) from of rear-frame mounting hardware (B).



2. Carefully roll tiller out-from-under rear of tractor.

OPERATING

Tilling Tips

Install correct front and rear tractor weights. See Install Weights and Chains in Installing the Tiller section.

IMPORTANT: Avoid damage!

DO NOT back up or make sharp turns with the tiller in the ground.

Till with engine at FAST throttle, control ground speed with appropriate transmission speed range.

Check tines before you till. Replace missing, bent, or broken tines.

When you till hard ground or sod, till at a shallow depth for the first pass. Till deeper on each pass after that.

When you till a small area, make a pass through the middle, then circle alongside the original pass, working to the outside. After you finish, make a few passes around the edge to cover ridges left by turning.

Till straight ahead when possible. This will leave fewer ridges from turning.

For seed bed preparation, till the soil once in the fall. Decaying vegetation will add valuable nutrients to the soil by spring. If the terrain is hilly or uneven, wait until spring, or leave some untilled strips, to help reduce soil erosion. The climate and terrain will help you decide the best time to till.

Before Tilling



Test soil condition by squeezing it in your hand. If soil forms a ball, it is too wet to till. If soil does not compress easily or falls apart, it is ready to till.

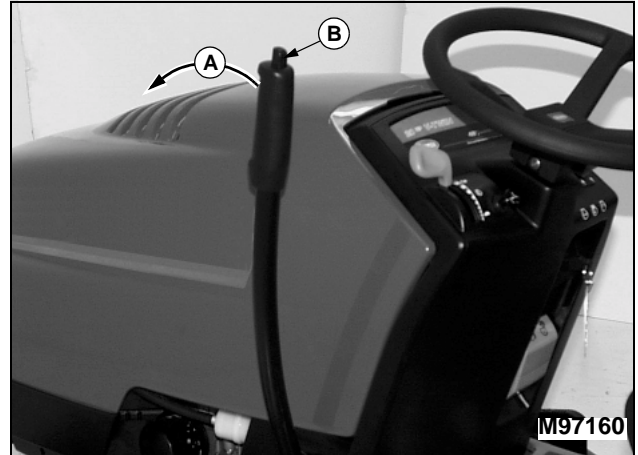
DO NOT till when soil is wet. Wet soil will stick to tines and tine shaft. Wet soil will clump-up and dry out hard, making it difficult to work during the growing season.

Before tilling mow tall weeds and grass to keep them from wrapping around tines or tine shaft.

Always pick up rocks, branches, and other objects that might damage tiller.

Always check tines before tilling. Repair or replace loose, bent, or broken tines.

Move Implement to “LOWER” Position



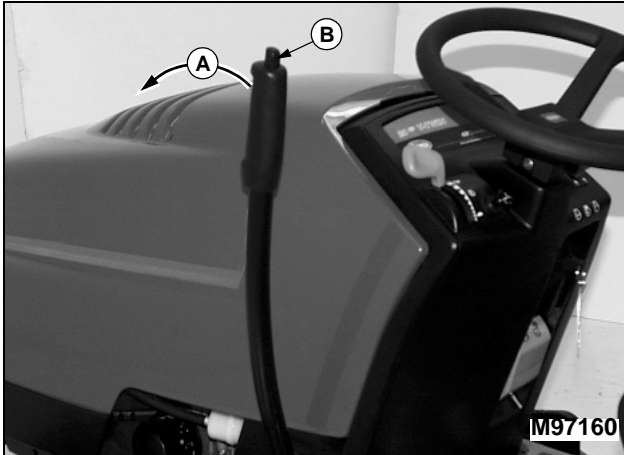
1. First pull implement lift lever (A) rearward slightly, then depress and hold down button (B) to unlock lift lever locking mechanism.

2. Push lift lever (A) forward out of “RAISE” position (shown), release button (B) as you continue to push lift lever all-the-way forward until a loud metallic-click is heard, signalling lever is in “LOCK-OUT” position, then release lift lever—it is now locked into “LOWER” position (see next figure).

“LOCK-OUT” Position: locks tiller in “LOWER” position—for difficult conditions, such as, heavy soils, clay, or sod. When lift lever is “LOCKED-OUT” this means the lift spring in the lift linkage has no effect on tiller weight.

OPERATING

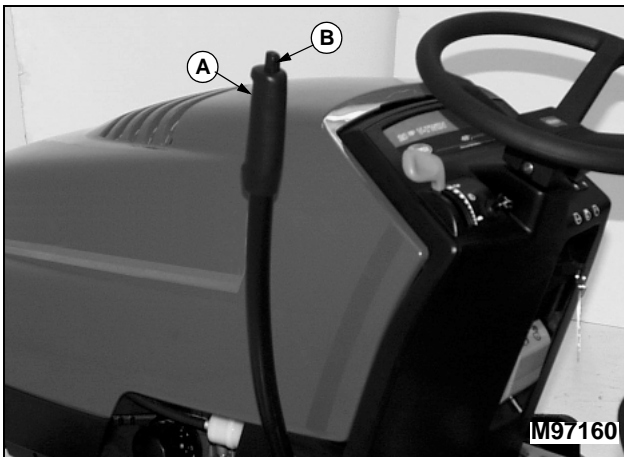
Move Implement to “RAISE” Position



1. First push implement lift lever (A) forward slightly, then depress and hold down button (B) to unlock lift lever locking mechanism.
2. Pull lift lever rearward out of “LOWER” position, release button (B) and continue to pull lever all-the-way rearward until a loud metallic-click is heard, signalling lever is in “LOCK-OUT” position, then release lift lever—it is now locked into “RAISE” position.

“LOCK-OUT” Position: locks tiller in “RAISE” position—for making turns at end of rows. When lift lever is “LOCKED-OUT” this means the lift spring in the lift linkage has no effect on tiller weight.

Move Implement to “FLOAT” Position

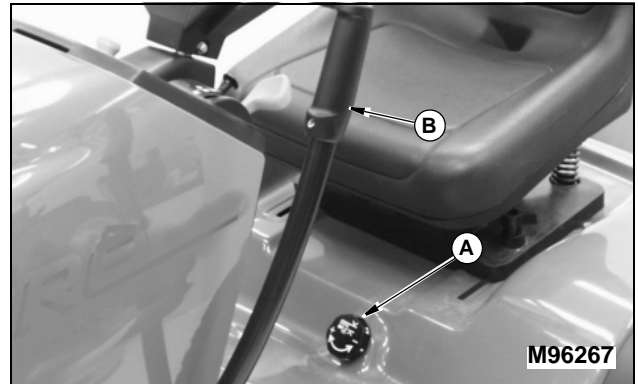


1. First pull implement lift lever (A) rearward slightly, then depress and hold down button (B) to unlock lift lever locking mechanism.
2. Push lift lever (A) out of “RAISE” position, release button (B) and lift lever. Lift lever is now in “FLOAT” position (between “RAISE” and “LOWER” positions).

“FLOAT” Position allows implement to move with contour of ground which causes the lift spring in the lift linkage to exert maximum depth force on tiller weight. “FLOAT” position performs best in light-to-medium soils: such as sandy, loam, or soils previously tilled.

Using Depth Control Knob

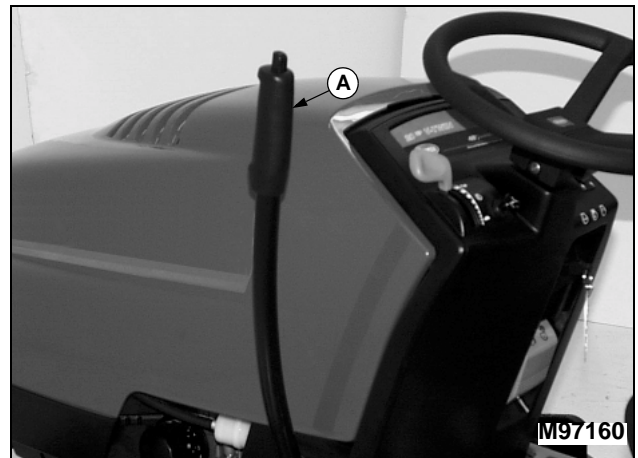
Adjust depth control knob to set tilling depth. Tiller will return to the same depth each time you lower it.



1. Use lift lever (B) to raise tiller as high as it will go.
2. Turn knob (A) clockwise to raise the tiller depth or counter-clockwise to lower the depth, as viewed from operator's seat.
3. If you cannot adjust for the desired tilling depth, see Adjusting Tilling Depth.

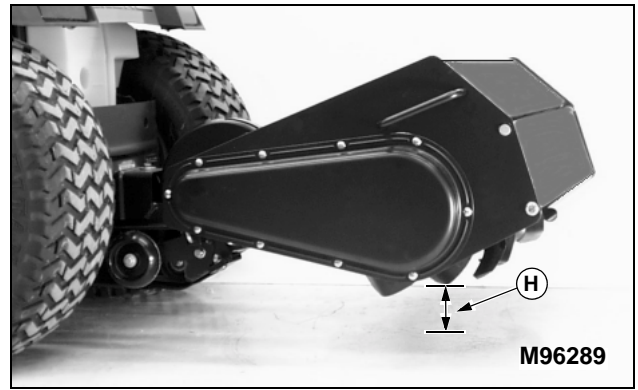
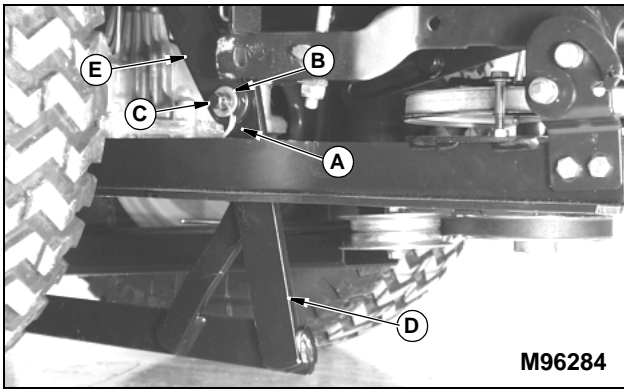
Adjusting Tilling Depth

1. Stop engine and set PARK brake.



2. “LOCK-OUT” lift lever (A) into “LOWER” position to release spring tension in lift linkage.

OPERATING



3. Move to right side, below tractor footrest—remove spring locking ring (A) and flat washer (B) from lift rod pin (C).
4. Remove lift rod (D) from tractor lift link (E).

- Measure distance (H) between ground and the lowest tine. The distance should be 75 mm (3-in.).

IMPORTANT: Avoid damage!

DO NOT expose more than 30 mm (1-1/4 in.) of thread (G) or lift rod and clevis threads could be damaged or lift rod could separate from clevis.

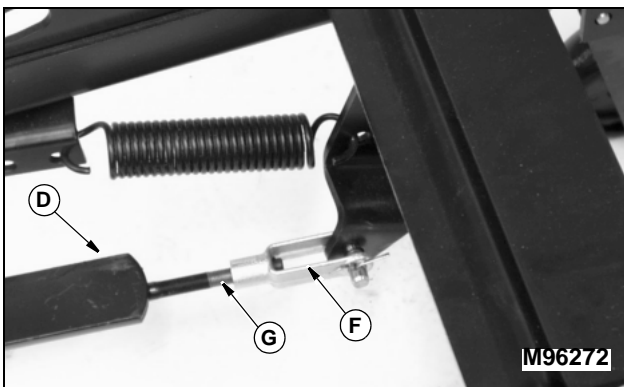
NOTE: Maximum tilling depth is 150 mm (6-in.)—bottom of shaft to bottom edge of lowest tine.

Operating Tiller

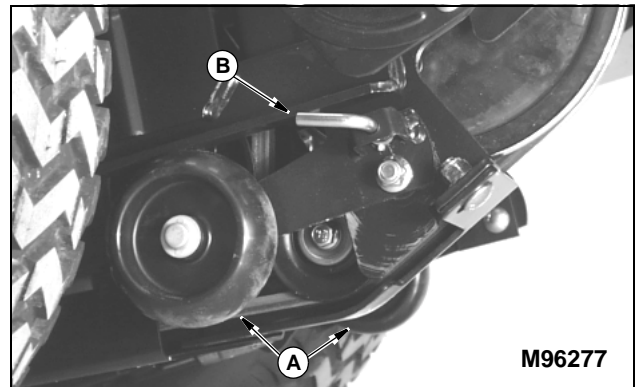


CAUTION: Avoid injury!

- Pick up objects from tilling area.
- Guards and shields must be in place.
- Clear the work area of people.
- DO NOT let children operate the tractor/tiller.
- DO NOT let children ride on the tractor or tiller.



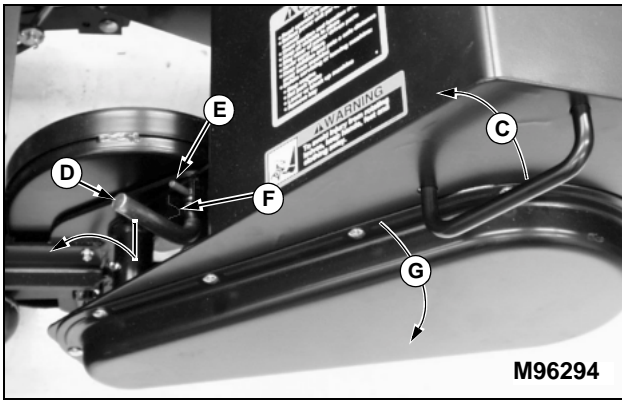
Picture Note: Tiller frame removed from tractor for clarity.



5. Turn lift rod (D) clockwise into clevis (F) to increase tilling depth and counterclockwise out of clevis (F) to decrease tilling depth.
6. Fasten lift rod (D) to tractor lift link (E) with washer (B) and spring locking ring (A).
7. Check tiller ground clearance:
 - Use lift lever to raise tiller as high as it will go.

1. Move to rear of tractor—lock frame wheels (A) in the RAISED position (shown). Make sure locking pins (B) are locked into locking bracket hole.

OPERATING



2. Move to left side of tiller housing—grasp handle (C) to raise tiller housing to remove pressure on transport locking pin (D) and continue to hold tiller housing stationary while you pull transport locking pin (D) out and rotate it forward into “LOCK-OUT” position, rolled pin (E) locked in frame slot (F).
3. Slowly lower tiller housing down (G) against tractor lift linkage.
4. Start engine. Put throttle lever at 1/4 position. (See your tractor operator’s manual for throttle lever operation.)

NOTE: For those tractors with Reverse Implement Option (RIO), the tiller will stop when the tractor is put in reverse unless Reverse Implement Switch (RIS) is activated before going in reverse.

5. To engage tiller, put PTO control in the ON position. (See your tractor operator's manual for PTO operation.)
6. Push throttle lever to the FAST position.
7. UNLOCK the park brake.
8. Till ground at a safe travel speed using appropriate transmission ground speed.

Inspecting Or Unplugging Tiller



CAUTION: Avoid injury! Stop the engine and wait for all moving parts to stop before leaving tractor seat.

1. STOP the tractor.
2. Put PTO control in the OFF position.
3. Lower tiller to the ground.
4. LOCK the park brake.
5. STOP the engine.
6. Remove the key.



7. Move to rear of tiller—lift shield (A) to gain access to tines and shaft.
8. Safely inspect or unplug tines and shaft area.

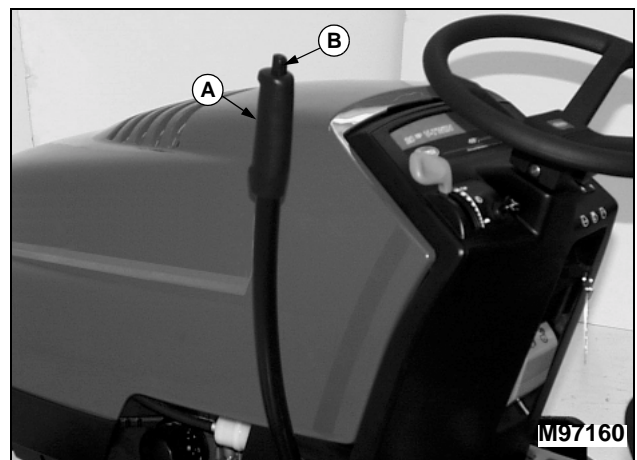
Parking Tiller

1. STOP tractor and turn PTO switch OFF.
2. STOP engine, LOCK park brake, and remove key.
3. Lower tiller to ground.

Transporting Tiller

Drive the tractor with the tiller in the “TRANSPORT” position when traveling from one tilling area to the other. Drive the tractor at a safe travel speed. Slow down on slopes or rough ground.

Place tiller in “TRANSPORT” position as follows:

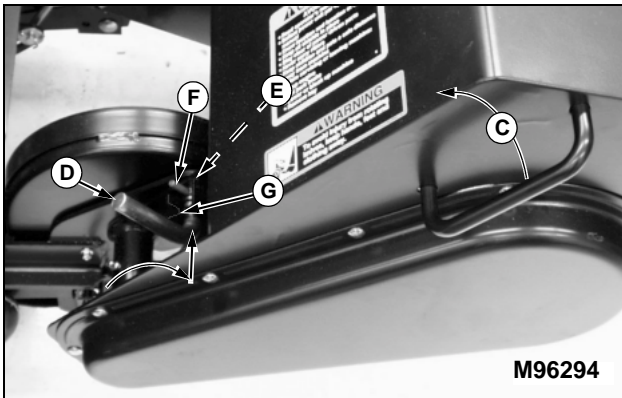


1. First push implement lift lever (A) forward slightly, then depress and hold down button (B) to unlock lift lever locking

OPERATING

mechanism.

2. Pull lift lever (A) reward out of “LOWER” position (shown), release button (B) and continue to pull lever all-the-way reward until a loud metallic-click is heard, signalling lever is in “LOCK-OUT” position, then release lift lever—it is now locked into “RAISE” position, lift lever in close proximity to steering wheel.



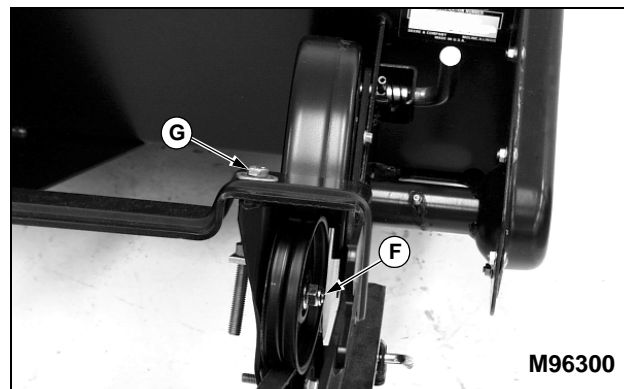
3. Move to left side of tiller housing—grasp handle (C) to raise tiller housing to align transport locking pin (D) and transport bracket locking hole (E). Rotate transport locking pin (D) reward to unlock rolled pin (F) from frame slot (G) and release transport locking pin so it springs into “LOCK-OUT” position in transport bracket locking hole (E).

4. Slowly lift up and push down on handle (C) before releasing it to ensure tiller housing is “LOCKED-OUT” into “TRANSPORT” position.

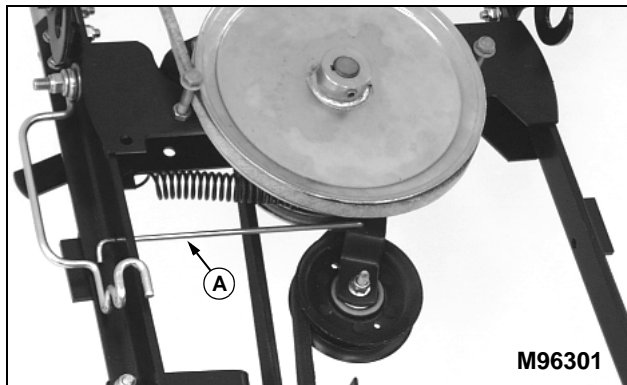
SERVICE

Service Intervals

5 Hours	Check belt tension.
	Clean under belt shield.
10 Hours	Lubricate drive sheave bearing.
	Lubricate rear jackshaft.

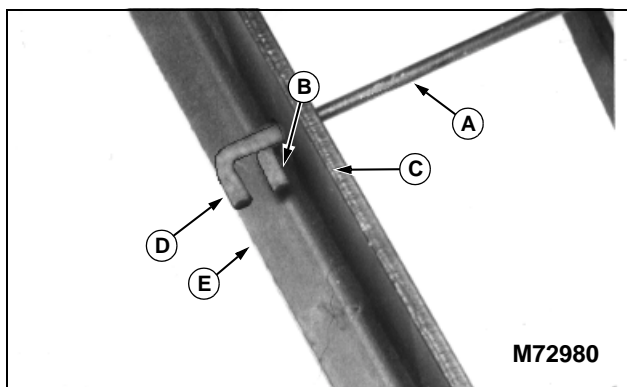


Checking Belt Tension



Picture Note: Tiller removed for clarity purposes only.

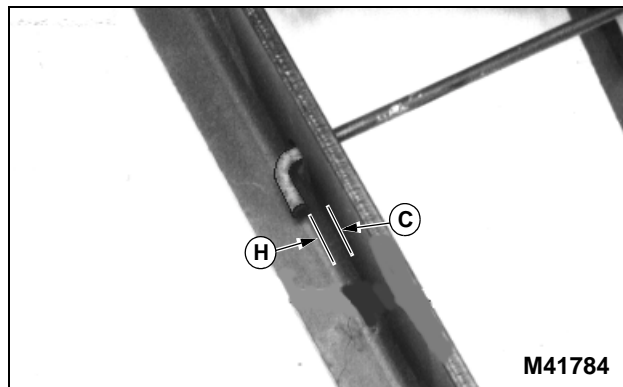
1. Check position of belt tension rod (A):



- If rod end is in position (B), against the vertical frame rail (C), the belt is too tight and must be loosened.
- If rod end is in position (D), extends beyond horizontal frame rail (E), the belt is too loose and must be tightened.

2. To adjust belt tension:

- Move to left rear of tiller frame—loosen nut (F) on the idler pulley.



- To tighten belt—turn bolt (G) counter-clockwise until a 3 mm (1/8 in.) clearance exists between inside edge of rod end (H) and vertical frame rail (C).
- To loosen belt—turn bolt (G) clockwise until a 3mm (1/8 in.) clearance exists between inside edge of rod end (H) and vertical frame rail (C).
- Tighten nut (F) on the idler pulley after adjustment.

SERVICE

Cleaning Under Belt Shield



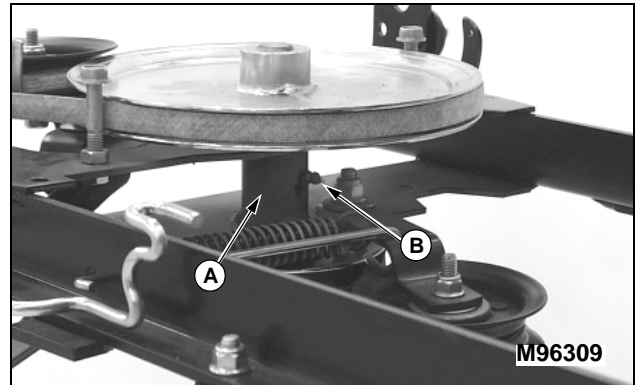
Picture Note: Tiller removed for clarity purposes only.

1. Move to left side of tiller housing—remove two self-tapping cap screws (A) and belt shield (B).



2. Clean dirt from sheave and surrounding area.
3. Install shield (B) and self-tapping cap screws (A) until snug—DO NOT over-tighten or you may damage threads in shield holes.

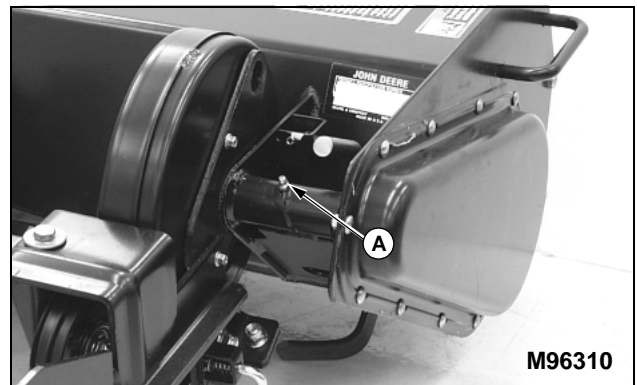
Lubricating Drive Sheave Bearing



Picture Note: Tiller removed for clarity purposes only.

Move to front of tiller frame—lubricate drive shaft assembly bearing (A) at grease fitting (B) with a Multi-Purpose Grease, or equivalent, until grease comes out of bearing seals.

Lubricating Rear Jackshaft



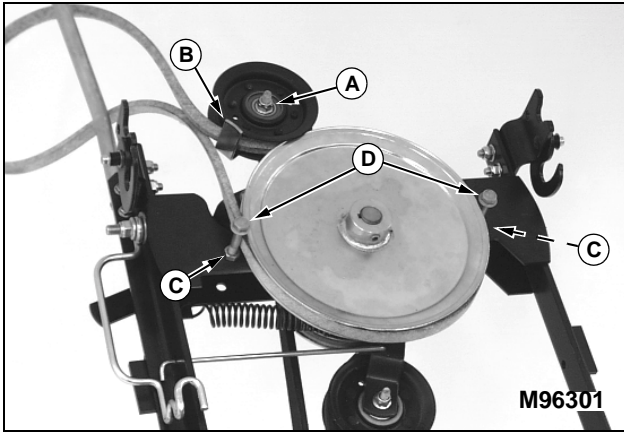
Picture Note: Tiller removed for clarity purposes only.

Move to left side of tiller housing—lubricate jackshaft grease fitting (A) with two or three shots of a Multi-Purpose Grease, or equivalent.

Remove Primary Drive Belt

1. Remove tiller from tractor. (See the REMOVING section.)

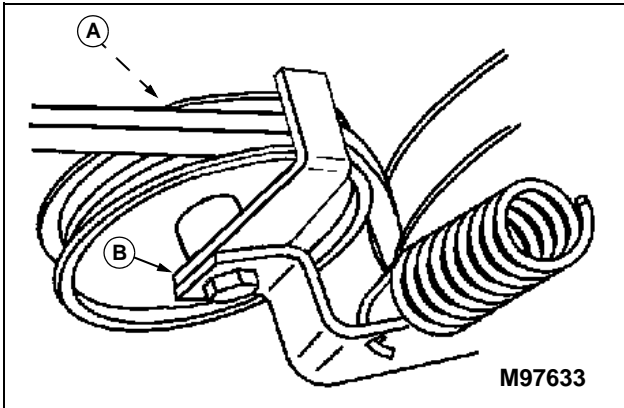
SERVICE



2. Loosen flange lock nut (A) on tensioning idler. Move belt guide (B) away from belt.
3. Loosen top jam nuts (C), one on each side, to tilt guide bolts (D) away from drive sheave.
4. Remove belt.

Install Primary Drive Belt

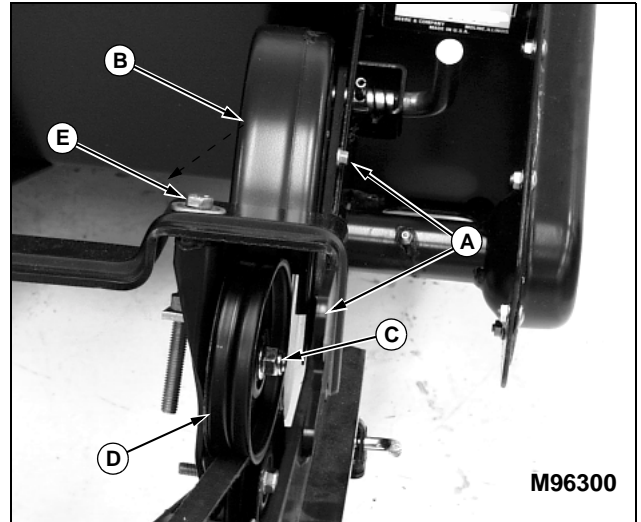
1. Install belt on drive sheave with wide-edge of belt facing guide bolts (D).
2. Tighten top jam nuts (C), one on each side, to properly align guide bolts (D).
3. Install belt between tensioning idler and belt guide (B) so narrow-edge of belt faces belt guide (B).



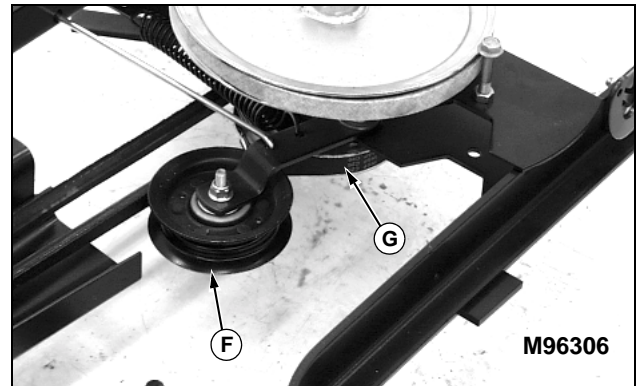
4. Position belt guide (B), as shown. Tighten tensioning idler flange lock nut (A) to 40 N•m (354 lb-in.) while holding belt guide stationary.

Remove Secondary Drive Belt

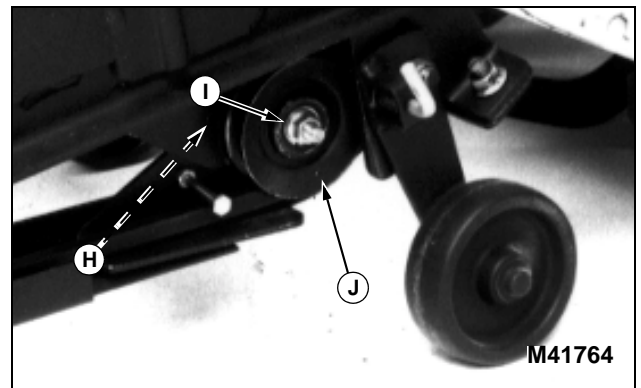
1. Remove tiller from tractor. (See the REMOVING section.)



2. Remove two self-tapping cap screws (A) to remove belt shield (B).
3. Loosen flange nut (C) to loosen tensioning idler (D).
4. Turn bolt (E) clockwise to move tensioning idler (D) up in the slot.

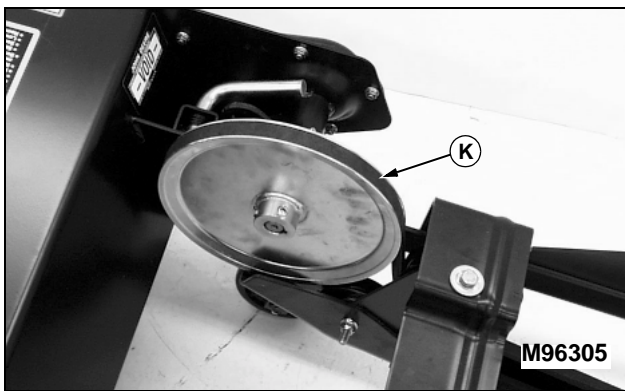


5. Move to front of tiller frame—remove secondary belt from front idler (F) and front drive sheave (G).



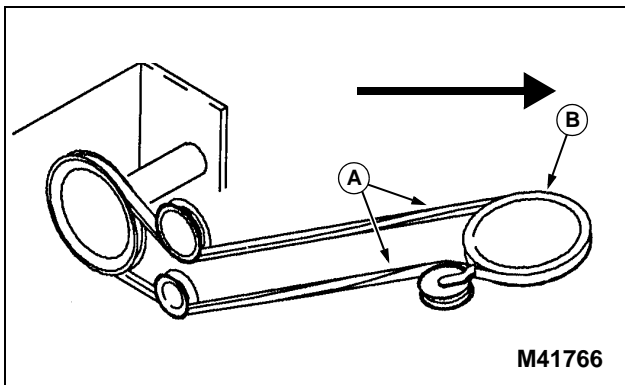
6. Move to left rear of tiller—remove lock nut (H) on inside of frame from idler mounting bolt (I) to remove V-idler (J) from inside of belt.

SERVICE

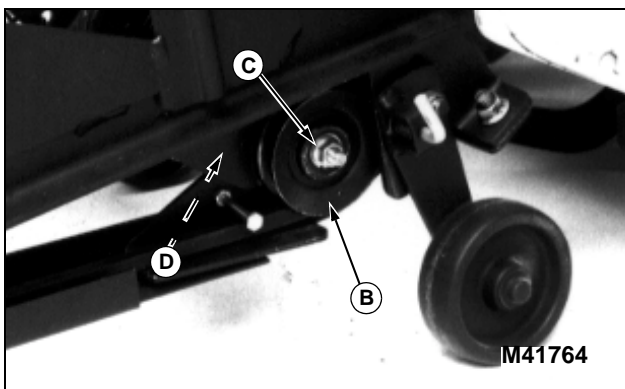


7. Remove secondary belt (K) from tiller drive sheave.

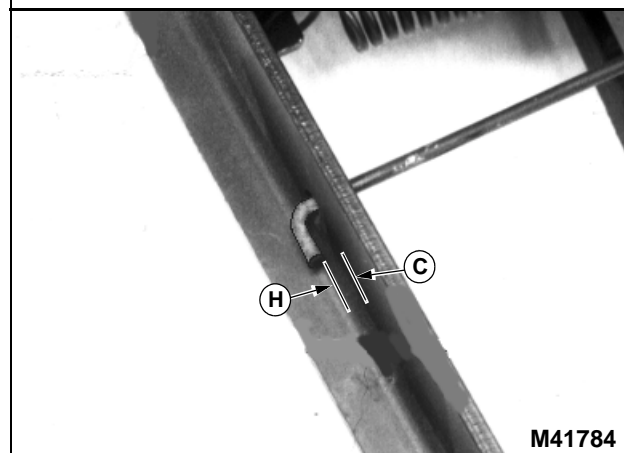
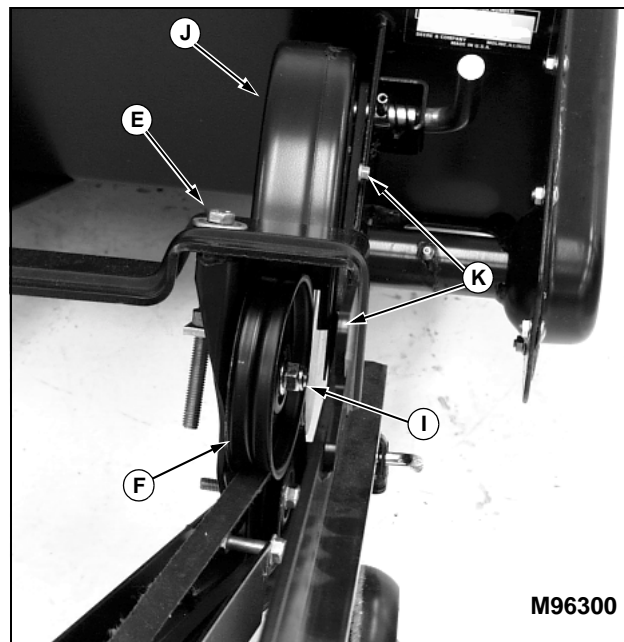
Install Secondary Drive Belt



1. Install new secondary drive belt with one twist (A), as shown, to seat "V" of belt in secondary drive sheave (B). DO NOT cross-over belt (forming an "X" pattern) when installing or tiller drive rotation will be reversed.



2. Move to left rear of tiller—install V-idler (B) inside belt and fasten with mounting bolt (C), outside-in, and tighten with lock nut (D) on inside of frame.




3. Turn bolt (E) counterclockwise to move tensioning idler (F) as far down in slot as necessary to tension belt properly—until inside-edge of front gauge rod (G) has 3 mm (1/8 in.) clearance from vertical frame rail (H).

4. Tighten tensioning idler nut (I).

5. Install shield (J) and fasten with two self tapping cap screws (K) until snug—DO NOT over-tighten or you may damage threads in shield holes.

Replacing Tines

 **CAUTION: Avoid injury! DO NOT work under a raised tiller unless it is safely supported. Tiller could fall on you, causing serious injury.**

1. Park machine safely.

SERVICE

2. Raise tiller as high as it will go if still on tractor.

NOTE: For ease in replacing tines, you can remove tiller from the tractor and turn it completely upside down. Put down protective tarp or carpet to protect paint finish.

3. Put tiller in TRANSPORT position. (See Transporting Tiller in OPERATING section.)

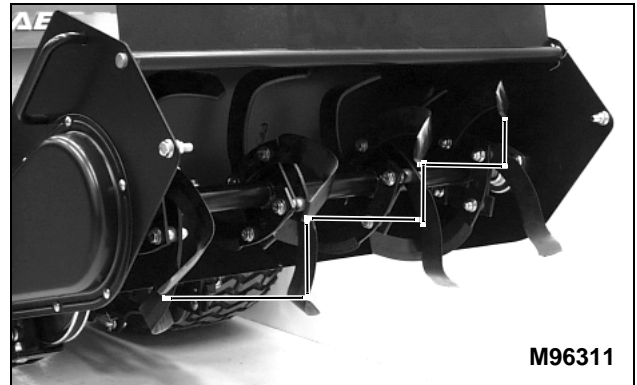


4. Safely put jack stand or blocks under tiller (tiller removed or still on tractor).

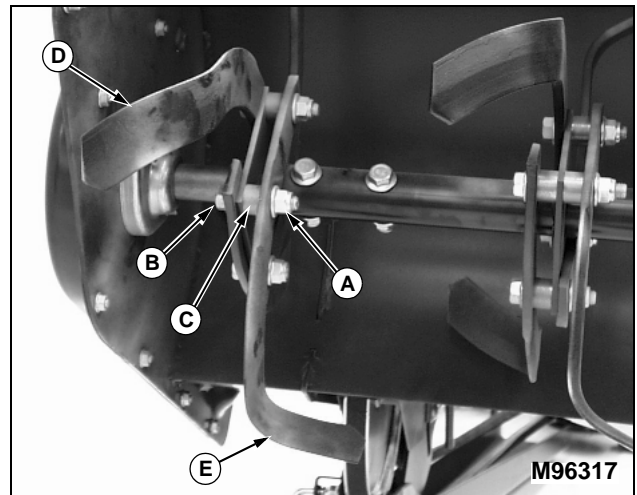
NOTE: Make sure you install the new tines and hardware EXACTLY as the old tines and hardware were positioned. Use the pictures to help you install tines correctly. Properly installed tines have a step-up pattern from left-to-right.

Each cluster of tines MUST have two left tines (D) and two right tines (E):

- Alternate left and right tines in each cluster.
- A bolt with NO SPACER is an M10 x 35 bolt.
- A bolt with ONE SPACER is an M10 x 45 bolt.
- A bolt with TWO SPACERS is an M10 x 60 bolt.

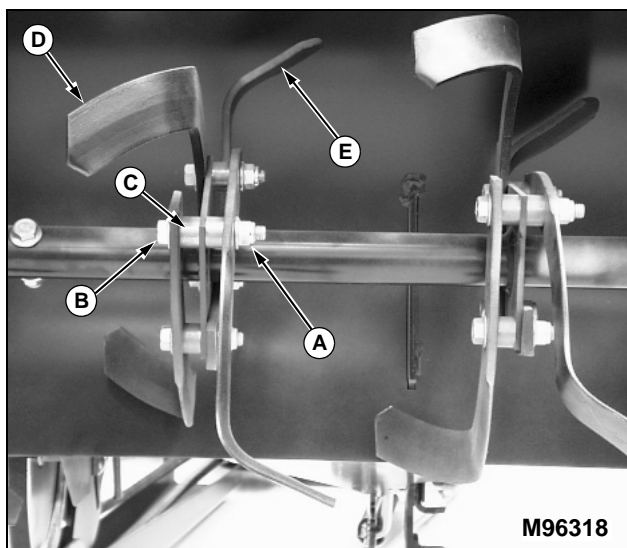


5. Replace tines:

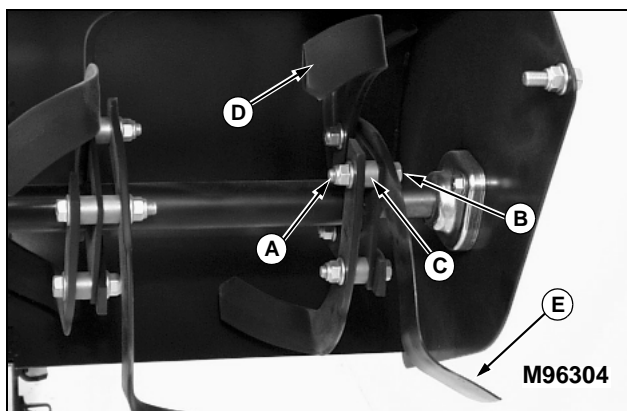


- **Left Set:** Remove lock nuts (A), bolts (B), spacers (C), two left tines (D), and two right tines (E). Remember to install new bolts so heads are to left side and new lock nuts are to right side. A total of two spacers are used in this set.

SERVICE



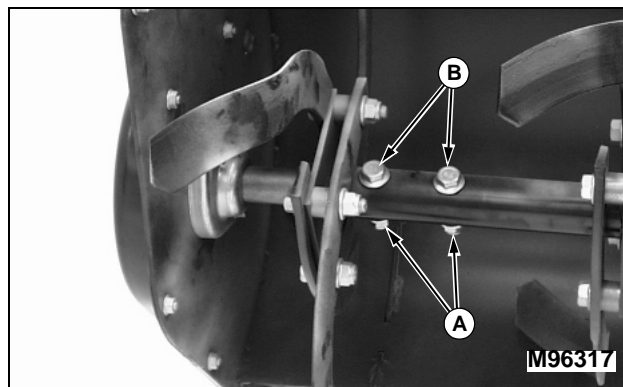
- **MiddleTine Sets:** Remove lock nuts (A), bolts (B), spacers (C), two left tines (D), and two right tines (E). Remember to install new bolts so heads are to left side and new lock nuts are to right side. A total of eight spacers are used in these middle tine sets—four in each set.



- **Right Tine Set:** Remove lock nuts (A), bolts (B), spacer (C), two left tines (D), and two right tines (E). Remember to install new bolts so heads are to right side and new lock nuts are to left side. A total of two spacers are used in this set.

6. Tighten all lock nuts to 75 N•m (55 lb-ft).

Replacing Shaft Bolts



1. Move to left side of tiller shaft—remove lock nuts (A) and bolts (B).
2. Align shaft holes and install new bolts (B) and lock nuts (A). Tighten lock nuts to 75 N•m (55 lb-ft).

Grease

Use a SAE Multi-purpose grease based on the expected air temperature range during the service interval.

TROUBLESHOOTING

Using Troubleshooting Chart

If you are experiencing a problem that is not listed in this chart, see your authorized dealer for service.

When you have checked all the possible causes listed and you are still experiencing the problem, see your authorized dealer.

IF	CHECK
Tiller is Noisy	Tines need to be straightened, tightened or replaced. Rocks and debris in tilling area.
Erratic Tiller Operation	Tines need to be straightened, tightened or replaced. Drive belts need to be tightened or replaced.
Tiller Will Not Till	Drive belt needs to be tightened or replaced. Replace shaft bolts.
Tractor and Engine Slow Down	Throttle not at "FAST" position. Tilling too deep Decrease travel speed.
Not Enough Tillage Depth	Throttle not at "FAST" position. Check tine placement or replace tines.
Tine Shaft Rotates But Tiller Does Not Till	Clean tines. Install tines correctly. Till at shallower depth. Replace shaft bolts.
Tilled Ground is Uneven	Rocks and debris in tilling area. Keep travel speed the same.
Tilling Results Are Poor	Cut tall grass or weeds before you till. Adjust transmission travel speed - slow down.
Tractor Will Not Pull Tiller Because Wheels Slip Too Much	Cut tall grass or weeds before you till. Till at shallower depth. Make more than one pass. Add rear wheel weights or tire chains on turf tires, or install bar tires.
Tine Shaft Does Not Rotate	Remove rock or trash wedged between shaft and housing. Replace shaft bolts. Tighten or replace drive belts.
Tiller Hard To Raise	Remove dirt, mud, and trash from shaft and tines.
Tiller Bounces When It Is Tilling Or Will Not Penetrate	Secondary drive belt installed incorrectly.
Tiller Pushes Tractor	Add rear wheel weights, or tire chains on turf tires, or install bar tires.

STORAGE

Storing Tiller

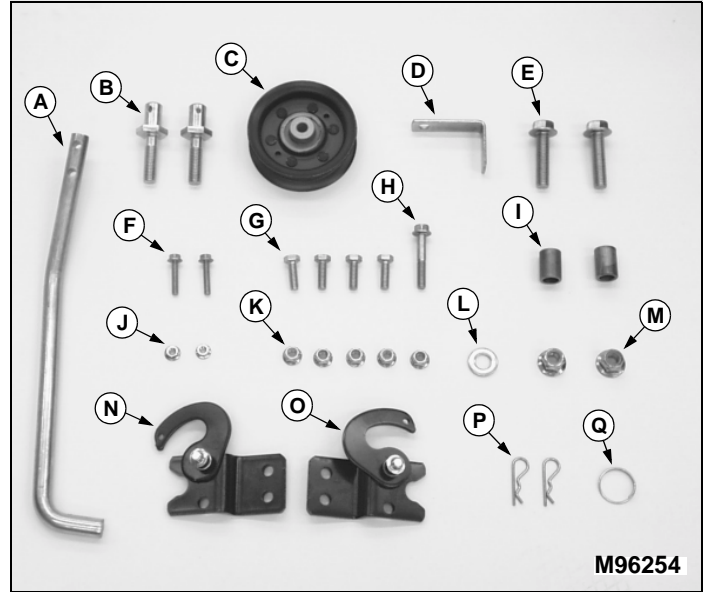
1. Remove tiller from tractor. (See the REMOVING section.)
2. Clean tiller with water pressure.
3. Check belts. If necessary, get new belts from your Authorized Service Center. DO NOT install the new belts until you take tiller out of storage.
4. Replace or repair badly worn or damaged parts.
5. Paint scratched areas to prevent rust.
6. Lubricate two grease points. (See the SERVICE section.)
7. Store tiller on a hard, level surface in a clean, dry place. If you must store tiller outside, cover it with a waterproof cover.

ASSEMBLY

Identify Parts – 30 Inch Mechanical Tiller



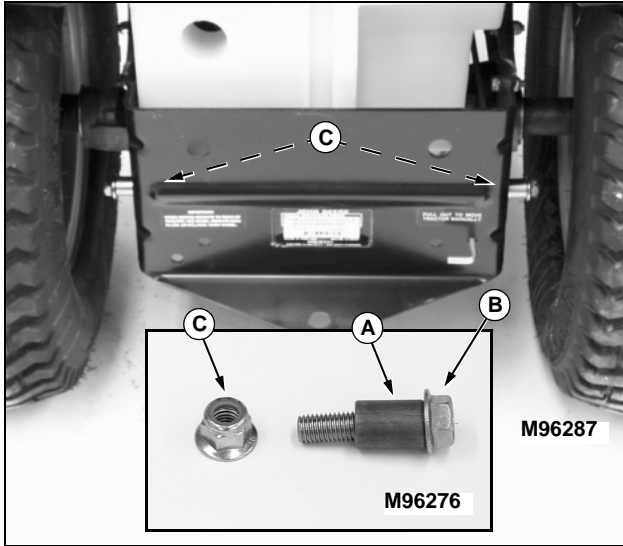
Bag of Parts



Qty. Used	Part Description	Size
1	Handle, Lift (A)	
2	Pin, Mounting (B)	
1	Sheave, Idler (C)	
1	Guide, Belt (D)	
2	Bolt, Flange (E)	M12 x 1.75 x 50 mm
2	Bolt, Flange (F)	M6 x 1.00 x 30 mm
4	Bolt, Hex (G)	M8 x 1.25 x 25 mm
1	Bolt, Flange (H)	M8 x 1.25 x 50 mm
2	Spacer, Rear (I)	
2	Nut, Flange (J)	M6 x 1.00 mm
5	Locknut, Flange (K)	M8 x 1.25 mm
1	Washer, Flat (L)	M13 x 24 x 2.5 mm
2	Locknut, Flange (M)	M12 x 1.75 mm
1	Tiller Clip, Left-Hand (N)	
1	Tiller Clip, Right-Hand (O)	
2	Pin, Spring Locking (P)	
1	Ring, Spring Locking (Q)	

ASSEMBLY

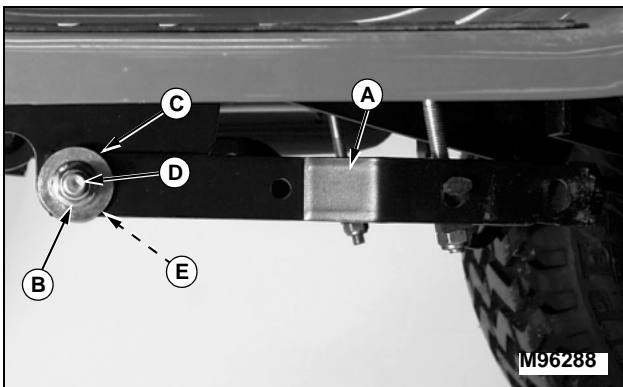
Install Tractor Rear-Frame Hardware



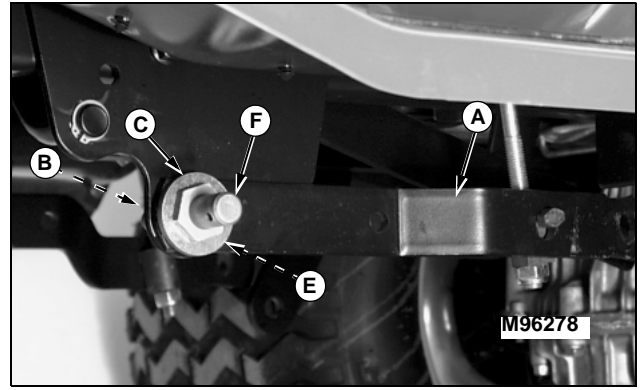
1. From bag of parts, install one spacer (A) on each M12 x 1.75 x 50 mm flange bolt (B).
2. Install spacers and bolts in BOTTOM holes at rear of tractor frame and secure with M12 x 1.75 locknuts (C) on inside of tractor frame. Tighten locknuts to 105 N•m (78 ft-lb).

Install Tractor Mid-Frame Mounting Pins

IMPORTANT: Avoid damage! If spacer (E) falls out of draft arm (A) when pivot bolt (D) is removed, return spacer to its original position inside the draft arm hole. Damage may occur if spacer is missing or improperly installed.

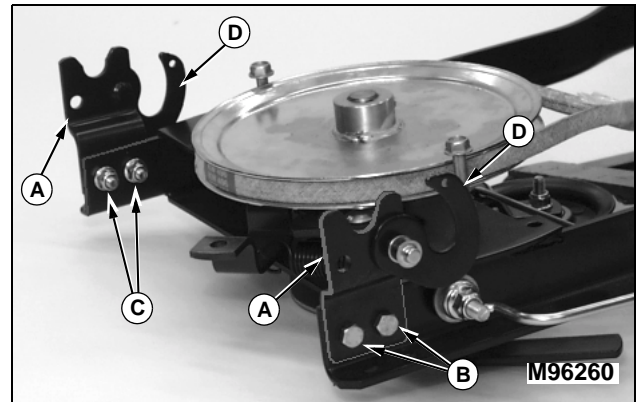


1. Locate draft arms (A) under left and right tractor foot rests. Remove locknut (B), washer (C), and pivot bolt (D) from each side. Discard original pivot bolts.



2. Place draft arms (A) back in their original positions. Make sure spacers (E) are installed properly inside draft arms (A).
3. Install original washers (C) on tiller mounting pins (F), from bag of parts, then install in draft arms, spacers, and mounting brackets. Fasten with original locknuts (B) on inside of mounting brackets. Tighten locknuts to 140 N•m (103 lb-ft).

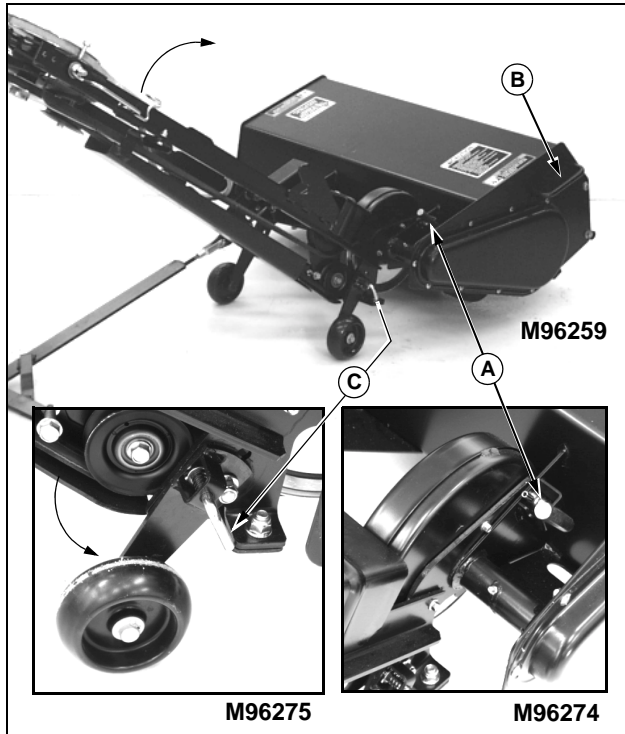
Install Clips On Tiller Frame Rails



- From bag of parts, install left and right tiller clips (A) to outside of correct tiller frame rails, so latches (D) flip forward. Fasten with two M8 x 1.25 x 25 mm hex bolts (B) and M8 x 1.25 locknuts (C). Tighten locknuts to 28 N•m (247 lb-in.).

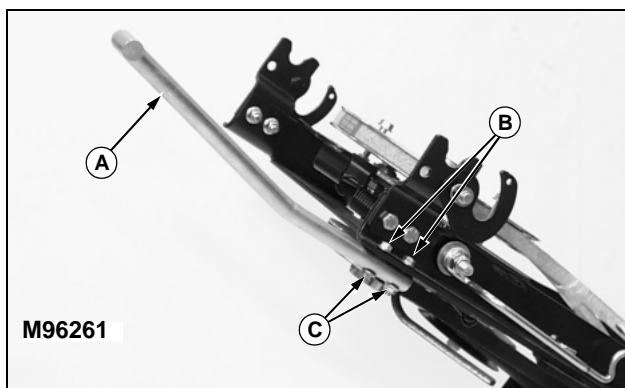
ASSEMBLY

Put Tiller Frame Rails In Transport Position

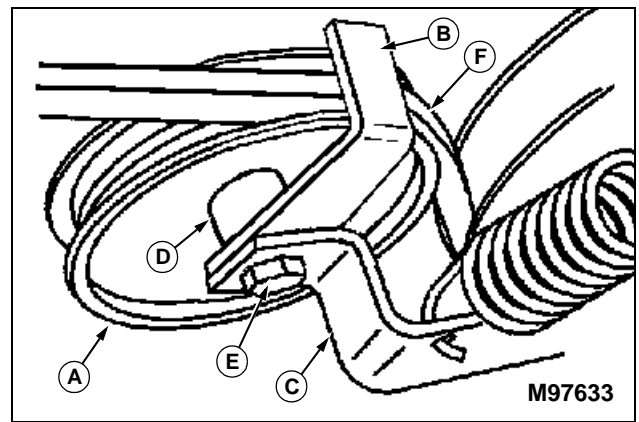


1. Pull left frame rail up until locking pin (A) can be locked into locking bracket hole. Push down on tiller handle (B) to rotate tiller housing while pulling left frame rail up to gain clearance to lower left frame wheel.
2. Unlock locking pin (C) and rotate wheel down into engaged position and make sure locking pin locks in locking hole. Lock right frame wheel down into engaged position in similar fashion.

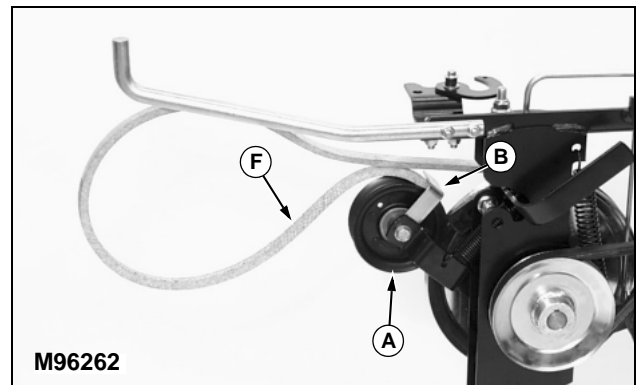
Install Lift Handle And Idler Sheave



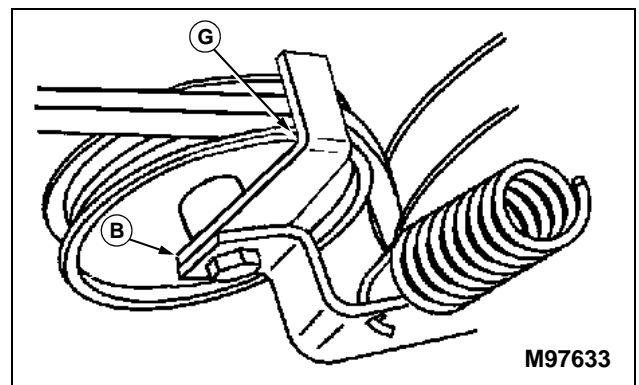
1. From bag of parts, install lift handle (A) under left frame rail with two M6 x 1.0 x 30 mm flange bolts (B), top-down, and fasten with two M6 x 1.0 flange nuts (C). Tighten two flange nuts to 17 N•m (150 lb-in.).



2. From bag of parts, position idler sheave (A) and belt guide (B) onto tiller tensioning arm (C). Make sure shoulder (D) on sheave is seated against the belt guide.
3. Install M8 x 1.25 x 50 mm flange bolt (E) from bottom side of tensioning arm. Install M8 x 1.25 locknut on top side of sheave finger tight only.



4. Remove shipping tape from belt and route belt between belt guide (B) and idler sheave (A) so small V-edge (F) is facing belt guide.



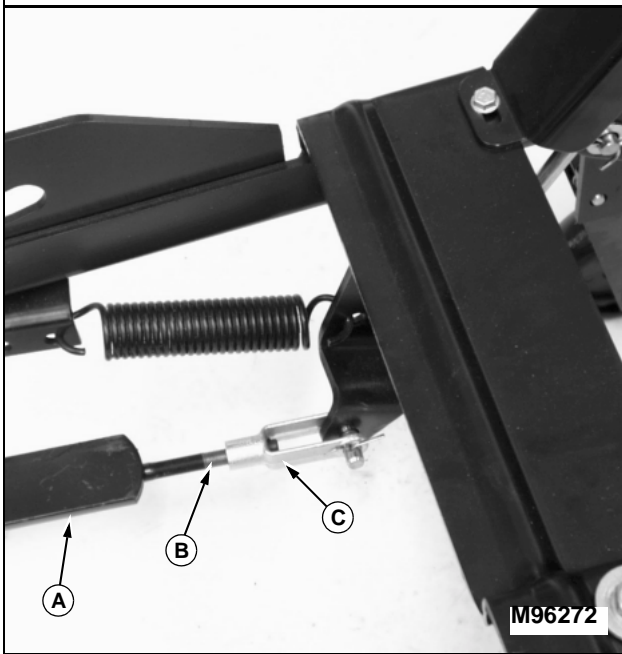
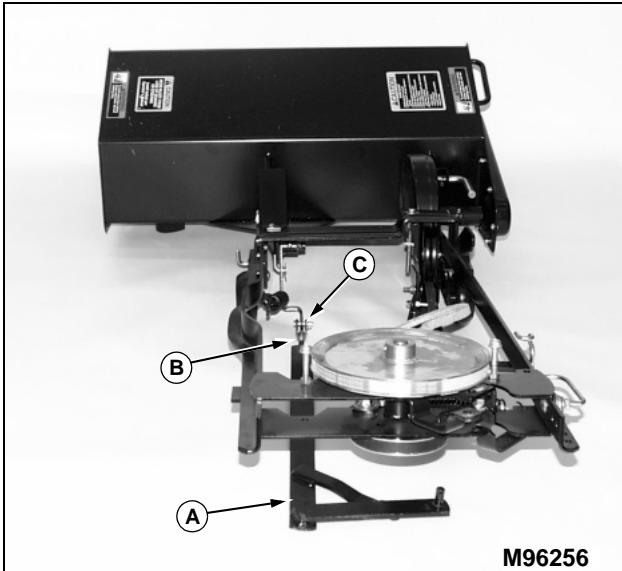
5. Adjust the position of belt guide (B) as shown. Make sure belt guide does not contact idler sheave at (G).

ASSEMBLY

NOTE: Make sure belt guide does not move out of position when tightening locknut.

6. Tighten M8 x 1.25 locknut to 40 N•m (354 lb-in.).
7. After tightening, make sure the idler sheave rotates freely on the tensioning arm.
8. Pull the belt tight and make sure belt guide does not contact idler sheave or belt.

Adjust Tiller Lift Rod



Turn threaded end (B) of tiller lift rod (A) clockwise into clevis (C), far enough so three-to-four threads are exposed inside clevis.

SPECIFICATIONS

Tiller Specifications

Dimensions:

Cutting Width	762 mm (30-in.)
Maximum Cutting Depth	150 mm (6-in.)
Maximum Lift Height	76 mm (3-in.)
Transport Height	204 mm (8-in.)
Rotor Diameter	356 mm (14-in.)

Miscellaneous:

Rotor Speed	250 rpm
Drive Chain	No. 50 Roller Chain
Tine Shaft Bearings	Sealed Ball Bearings

Recommended Lubricants

Grease	SAE Multi-Purpose Grease
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(Specifications and design subject to change without notice.)

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NOTES

QUALITY STATEMENT

Your product, designed and built by John Deere, is more than just a purchase, it's an investment in quality. That quality goes beyond our equipment to your dealer's parts and service support.

That's why John Deere has initiated a process to handle your questions or problems, should they arise. If you have questions or problems with your new product, please follow the steps below.

To locate your nearest authorized servicing dealer, please call the toll free number listed in your Tractor Operator's Manual.

Step 1

Refer to your operator's manual

- A. It has many illustrations and detailed information on the safe and proper operation of your equipment.
- B. It gives troubleshooting procedures, and specification information.
- C. It gives ordering information for parts catalogs, service and technical manuals.
- D. If your questions are not answered in the operator's manual, then go to Step 2.

Step 2

Contact your dealer

- A. Your authorized servicing dealer has the responsibility, authority, and ability to answer questions, resolve problems, and fulfill your parts and service needs.
- B. First, discuss your questions or problems with your dealer's trained parts and service staff.
- C. If the parts and service people are unable to resolve your problem, see the dealership manager or owner.
- D. If your questions or problems are not resolved by the dealer, then go to Step 3.

Step 3

Call the Customer Communications Center

- A. Your authorized servicing dealer is the most efficient source in addressing any concern, but if you are not able to resolve your problem after checking your operator's manual and contacting your dealer, call the Customer Communications Center.
- B. For prompt, effective service, please have the following ready before you call:
 - The name of the dealer with whom you've been working.
 - Your equipment model number.
 - Number of hours on machine (if applicable).
 - Your 13-digit serial number which you recorded on the inside front cover of this manual.
 - If the problem is with an attachment, your attachment identification number.
- C. Then refer to your Tractor Operator's Manual to locate the Customer Communications Center toll free number and call our advisor who will work with your dealer to investigate your concern.